CRYPTOZOOLOGICON

THE BIOLOGY, EVOLUTION, AND MYTHOLOGY OF HIDDEN ANIMALS

VOLUME I

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Darren Naish is a palaeozoologist and science writer based at the University of Southampton (UK) who mostly work on dinosaurs, pterosaurs and Mesozoic marine reptiles. He co-described the early tyrannosaur *Eotyrannus*, the new pterosaurs *Vectidraco* and *Eurazhdarcho*, and the Cretaceous ichthyosaurs *Acamptonectes* and *Malawania*. He is interested in all tetrapods and writes widely about amphibians, reptiles, birds and mammals for his world-famous blog, *Tetrapod Zoology* (currently hosted at Scientific American). His several previous books include *Walking With Dinosaurs: The Evidence* (with David M. Martill), *The Great Dinosaur Discoveries*, and *Tetrapod Zoology: Book One*. He has a long-standing interest in cryptozoology and has published extensively on this subject.

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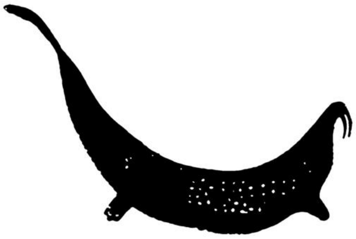
Cryptozoologicon

The Biology, Evolution and Mythology of Hidden Animals



Volume I

By *John Conway, C. M. Kosemen* and *Darren Naish*

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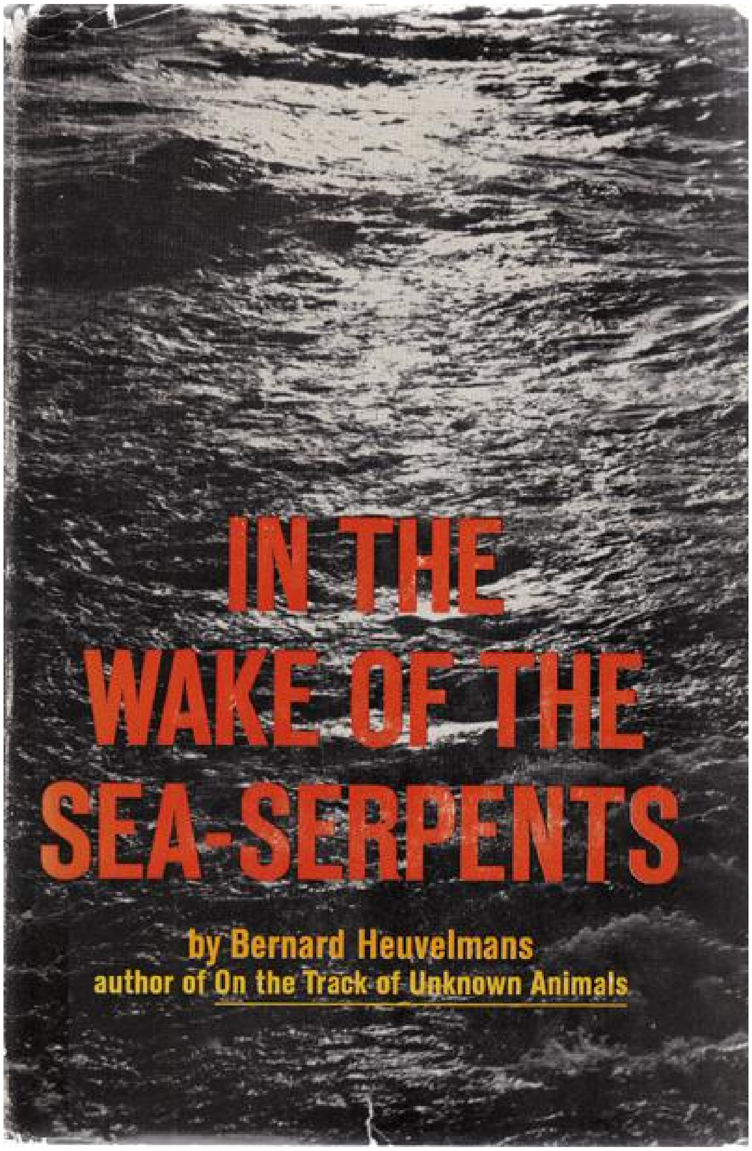
Introduction

The term 'cryptozoology' - originally coined in the 1950s and now considered fairly mainstream - is most usually associated with spectacular monsters from remote places, like the Yeti, Bigfoot and the gigantic horse-headed sea-serpents of lore. Despite this association with monsters, cryptozoology has most clearly been enunciated as the study of any animal known from anecdotal data: that is, from sightings, stories or published accounts, but unknown (as yet) from specimens that have been retained and are available for study. Defined as such, cryptozoology is not necessarily 'monster hunting', but the study of any creature known from anecdote. Contrary to stereotype, the targets of cryptozoology aren't all 'monsters', since cryptozoologists routinely investigate small mystery birds (Raynal 2006), dull, marmot-like mammals and small cats (Heuvelmans 1986), small lizard-like reptiles (Shuker 1997a), and even small mystery fish (Shuker 1996) and insects (Raynal 1996).

In an extensive but often arcane literature, cryptozoologists have collected, collated and analysed the reports, legends and stories that seemingly describe mystery creatures or 'cryptids' before going on to determine what sort of animals they might be, how they might have evolved, and how they might fit into their local ecosystem. The study of cryptids can be said to extend back into antiquity. However, cryptozoology as we know it today owes its popularisation to several prolific authors, all of whom essentially agree that eyewitness reports of mystery creatures can be interpreted as reliable descriptions of encounters with unknown species. These people have often argued that the inventory of animal species currently accepted by science is much incomplete, and fundamentally and frustratingly restrained by the arrogance, resistance and cynicism of mainstream scientists.

In the wake of Bernard Heuvelmans



Cover of one of the several editions of Bernard Heuvelmans's famous and oft-cited cryptozoological classic of 1968. Heuvelmans essentially 'invented' modern cryptozoology.

We mostly owe this view of a cryptid-filled world to Belgian zoologist and author Bernard Heuvelmans (1916-2001), widely regarded as the 'Father of Cryptozoology'. Heuvelmans was a trained zoologist whose PhD work focused on aardvark dentition. He published a single, uninfluential paper on that subject (Heuvelmans 1939) and, between 1941 and 1943, five additional papers on sirenian dentition. After the early 1940s, however, he did not contribute to the 'mainstream' technical zoological literature, but became dedicated to cryptozoology. In his 1958 book *On the Track of Unknown Animals* (originally published in 1955 as *Sur la Piste des Bêtes Ignorées*) and its 1968 follow-up *In the Wake of the Sea-Serpents* (also translated and modified from a French language predecessor), Heuvelmans wrote at length about the Yeti, Orang Pendek, New Zealand's otter-like Waitoreke, Australia's Queensland tiger, and about possible dinosaurs and pterosaurs in the Congo, gargantuan marine eels, weird long-necked seals, and *Basilosaurus* -like whales and Mesozoic-style marine reptiles that had perhaps survived to the modern day. Heuvelmans inspired many other researchers by showing that detailed analyses of cryptid reports, when combined with zoological and ethnological expertise, could allow the scholarly cryptozoologist to theorise to life the existence of all manner of unknown creatures.

Heuvelmans wrote many other books on cryptids (many still not translated into English) as well as several significant and often bold technical articles on cryptozoology and specific cryptids (Heuvelmans 1969, 1982, 1983, 1986, 1990).

Heuvelmans was heavily inspired by, and frequently gave credit to, Ivan T. Sanderson (1911-1973). Thanks to TV and radio shows, and numerous popular books, Scottish-born Sanderson became an American celebrity known for his immense knowledge of animals and their world. He was also deeply interested in UFOs, the paranormal, and cryptids, and wrote several books on these subjects. Like Heuvelmans, his role as a populariser cannot be underestimated and many ideas that persist today - about Yetis, sea monsters and the like - largely originated with him.

Viewed critically, Sanderson's writings often contain bizarre claims, he sometimes boldly pronounced things that were flat-out wrong, and he was prepared to accept ideas and accounts that probably warranted more scepticism. Like Heuvelmans, he was convinced of the veracity of the Minnesota Iceman (a hominid corpse, frozen in ice, and displayed as a carnival sideshow) and he was fooled into claiming that gigantic penguins (4.5m tall) were visiting the Florida coastline after a series of hoaxed tracks were discovered. Actually, Sanderson even claimed a sighting of one of the giant penguins himself, one of many cases in which he reportedly witnessed cryptids first-hand.

There is no doubt that both Heuvelmans and Sanderson could be regarded as walking encyclopedias of zoological information, and as important popularisers of exotic zoology. From a scientifically-minded viewpoint, however, it is obvious and inescapable that both were essentially outside the sphere of scientific research, both were predominantly involved in popularisation more than technical work, and both were strongly attached to ideas that were and are highly problematic (not because they were or are strange, but because they were or are poorly supported and difficult to accept).

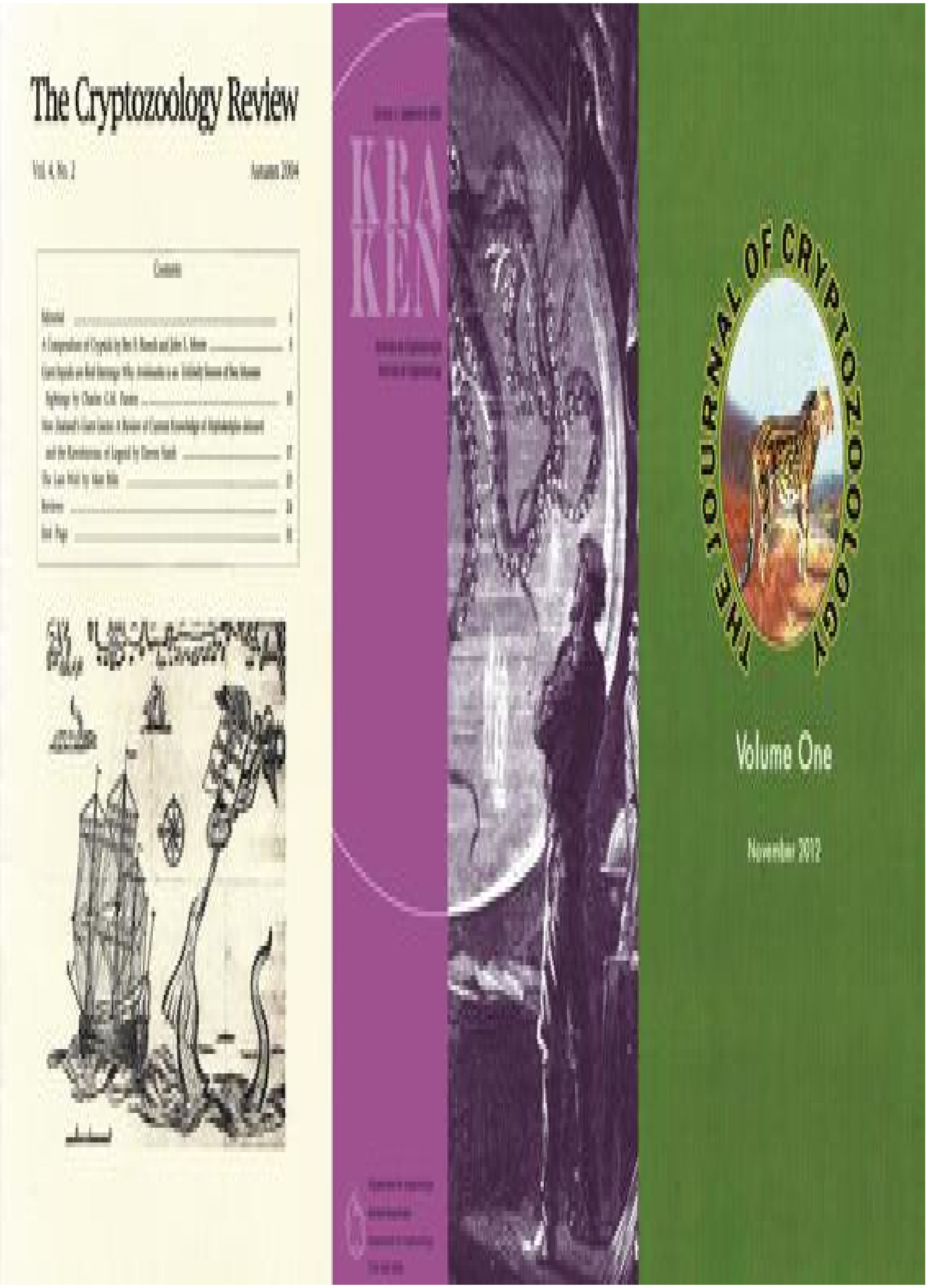
Following Heuvelmans's lead in particular, several authors produced similar collections and analyses of data on cryptids. Roy P. Mackal, a qualified biochemist, published an influential *On the Track* -style book in 1980 titled *Searching for Hidden Animals* (Mackal 1980). He also published books on the Loch Ness Monster (Mackal 1976) and on the supposedly dinosaur-like monsters of the Congolese swamps (Mackal 1987). Loren Coleman, a writer and investigator with special interests in Bigfoot, Forteana as well as the psychology and sociology of murder and suicide, is an internationally known writer of cryptozoology-themed books, all of which both evaluate cryptids and provide huge quantities of information on the people who search for them (Coleman 1989, 2003, Coleman & Clark 1999, Coleman & Huyghe 1999, 2003). Coleman has also produced a huge number of cryptozoology-themed popular articles and has an enormous online presence. Finally, Karl Shuker - a qualified biologist regarded by Heuvelmans as "the most brilliant of [his] disciples" - is similarly prolific, well known both for his many extremely popular books (Shuker 1989, 1991, 1995, 1997b, 2008a, b), substantial number of popular articles, and internet presence.

Beyond Heuvelmans: science and the ISC

Many other authors have also contributed to the cryptozoological literature. What is obvious is that, despite the technical qualifications held here and there by cryptozoological proponents, the majority of published cryptozoological hypotheses and evaluations are published in the popular literature; they are not technically evaluated nor subject to the standards of support expected for scientific contributions. The major role that creationists play in modern cryptozoology is seriously detrimental to the field, as is the fact that *anybody* who expresses an interest in mystery animal research suddenly becomes labelled a cryptozoologist.

Having said that, it would be unfair to imply that cryptozoology does not receive attention from people who really do work in the biological sciences. Comments on cryptids (some favourable, some less so) have often appeared in the scientific literature, and a large number of biologists, palaeontologists and other scientists have expressed opinions on cryptids. In 1982, Mackal and Richard Greenwell set up the International Society of Cryptozoology (ISC) for this very reason, aiming to both bring scientific respectability to the subject, and to provide a venue for the publication of peer-reviewed, technical cryptozoological research (the ISC's peer-reviewed journal is titled *Cryptozoology*). The ISC went into decline during the 1990s and eventually folded in 1998.

Another peer-reviewed journal (albeit desktop-published), *The Cryptozoology Review*, ran from 1996 to 2004, and another, *Kraken: Archives de Cryptozoologie*, saw print between 2008 and 2011. Since then, a few working scientists (including one of us) have published papers on cryptozoological subjects in the mainstream scientific literature (e.g., Woodley et al. 2010) and another peer-reviewed journal, *The Journal of Cryptozoology*, has appeared on the scene. At the time of writing, it has only seen a single issue.



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KRAKEN

THE JOURNAL OF CRYPTOZOOLOGY

Volume One

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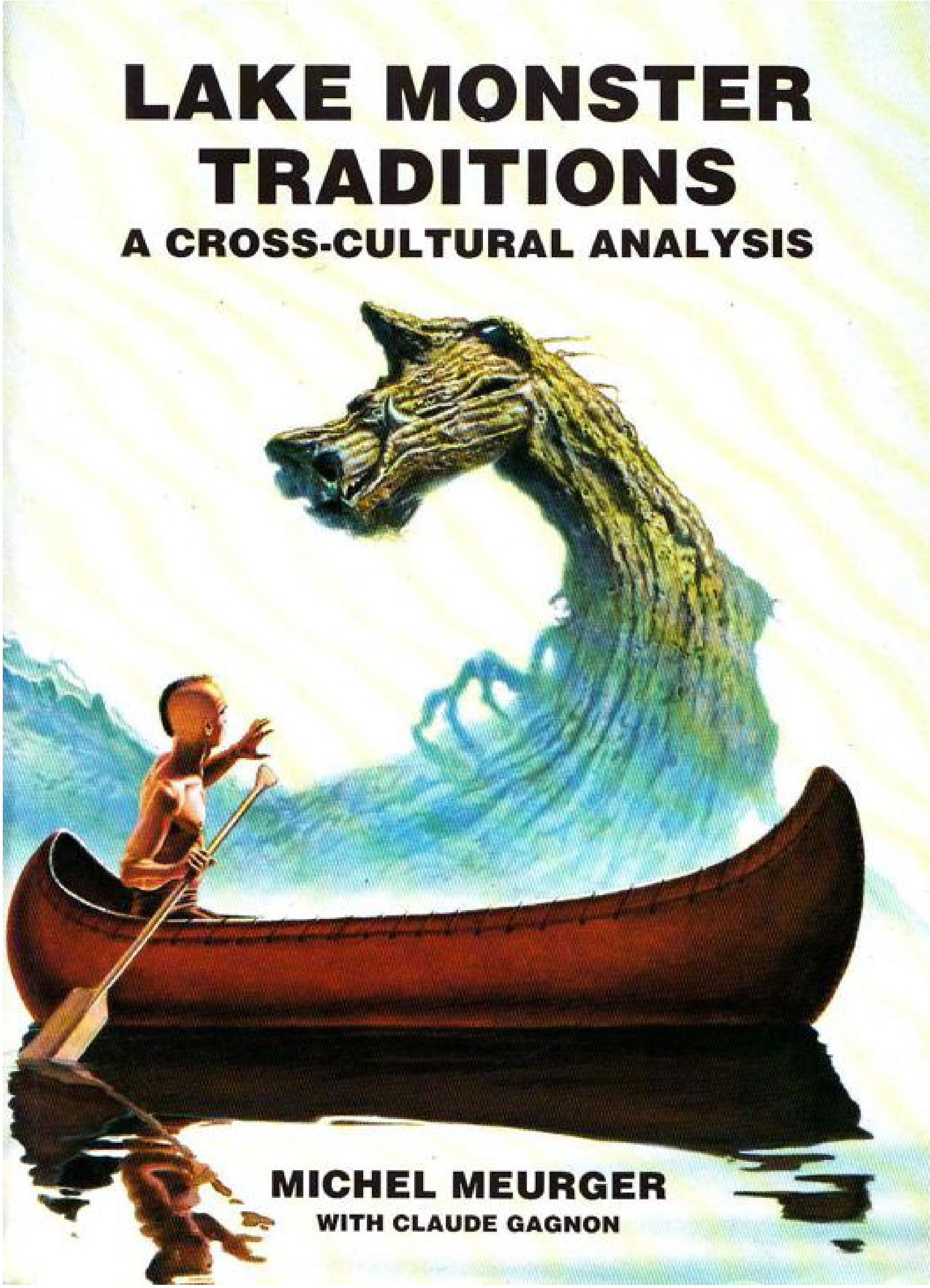
Cryptozoology journals past and present. The Cryptozoology Review and Kraken are both defunct; The Journal of Cryptozoology (at the time of writing) is brand new.

Cryptozoology vs science and scepticism While a large number of scientists are interested in cryptozoology, and were even much inspired by it in their younger years, the subject is generally treated with a large amount of scepticism and is even labelled a pseudoscience by some. Indeed, the majority of scientists - and maybe even the majority of people in many sectors of society - regard cryptids as the stuff of lore, legend and ridicule, not reality. Good evidence that the nessies, sea monsters, mystery primates and so on of the cryptozoological literature really exist has never been put forward and the evidence that *has* been put forward is problematic and unsatisfying.

Self-professed sceptics have always been interested in the claims of the cryptozoological literature and have often criticised such crypto-icons as Bigfoot and Nessie. However, sceptical views on cryptids often appear unsatisfactory because they frequently appear cursory and do not come from people familiar with cryptozoological data nor with the extensive cryptozoological literature.



LAKE MONSTER TRADITIONS

A CROSS-CULTURAL ANALYSIS

MICHEL MEURGER

WITH CLAUDE GAGNON

Cover of Meurger and Gagnon's significant 1988 volume. Michel Meurger has been described as the "scourge of the cryptozoological literalists".

In recent years, this trend has changed. In 1988, Michel Meurger and Claude Gagnon's *Lake Monster Traditions: A Cross-Cultural Analysis* was published in English (Meurger & Gagnon 1988). This heavily illustrated, complex and data-filled book argued that tales of Canadian water monsters could all be linked to age-old, archetypal ideas about dangerous bodies of water. Lake monster sightings, they argued, were not descriptions of unknown or new large animal species, but interpretations of events shaped by a long and complicated cultural, 'mythified' view of the world. In other words, the literalist interpretations of cryptozoologists like Heuvelmans and Mackal were woefully naive. This point of view is vehemently disliked by some cryptozoologists but looks increasingly likely to those with a sceptical approach.

Not only has evidence for cryptids failed to materialise, but studies have shown that the origin, evolution and perpetuation of ideas about mystery creatures are tightly linked with hoaxes, portrayals in popular culture, fiction, and mythology, and are also characterised by remarkable credulity, poor logic, and special pleading. Authors involved in making these arguments include Ronald Binns, Ulrich Magin, Benjamin Radford, Brian Regal and David Daegling. Most recently, Daniel Loxton and Donald Prothero have critically examined the stories behind the Yeti, Bigfoot, Loch Ness Monster, Cadborosaurus and Mokele-Mbembe (Loxton & Prothero 2013).

Cryptozoology as speculative zoology It is against a background of both knowing the cryptozoological literature, and of having a sceptical approach grounded in the biological sciences, that our current project - the *Cryptozoologicon* - emerged. Familiar as we are with the cryptozoological literature and with the claims and beliefs of cryptozoologists, we are enormously sceptical of the evidence that cryptozoologists are prepared to accept and see major problems with the speculations and assumptions inherent to the cryptozoological literature. If people work from the assumption that cryptids most likely exist, they need to be explained as real creatures, and here we come to the extensive amount of speculation that characterises cryptozoology.

Inspired by the success of our previous collaboration (*All Yesterdays,* a book that focuses on speculative depictions of fossil animals), we wanted to produce a work that features outstanding depictions of cryptids as if they're real animals and, in addition, focuses on speculative ideas about the identities and evolutionary histories of these creatures.

In creating cryptids from eyewitness accounts and other sources, cryptozoologists have indulged in an incredible amount of speculation about the identities of the creatures concerned. A cryptid is not just allocated to a specific group of organisms: its evolutionary history, biogeography and ecology are hypothesised about as well. In short, cryptozoologists can be accused of 'theorising' hypothetical animals to life. There are an enormous number of excellent examples of this phenomenon. Many are discussed in this book but, for classic examples, we point in particular to Heuvelmans's ideas on the identities and the evolutionary histories of sea-serpents (Heuvelmans 1968). What cryptozoologists need to appreciate is that the cryptids that they endorse are speculative entities, and that ideas about the evolution, biology and ecology of such hypothesised creatures is essentially an exercise in speculative fiction.

Heuvelmans (1968) analysed sea monster reports and concluded that nine distinct species were represented in the accounts, five of which are shown here (from left to right: super-eel, merhorse, marine saurian, many-humped and long-necked). There are many problems with his conclusions.

It is this speculative aspect of cryptozoology that really appealed to us. And, thus, the *Cryptozoologicon* was conceived: the idea being that we indulge in the same game, providing speculative backgrounds and identities to a select list of cryptids.

What the *Cryptozoologicon* does For each cryptid, our entries consist of three sections. We consider it important that people understand exactly what we have done. In the first section of text, we briefly review what people have said beforehand about the given cryptid. We refer to the key accounts and describe what the creature is supposed to look like. In the second section, we present an evaluation of the reports, essentially concluding as to what the given cryptid might be, and whether the accounts that describe it refer to a real creature or not. Given that we have included quite a range of mystery animals in our book - some of which are fairly ridiculous and others of which have essentially been debunked - our conclusions range from the open-ended to the 'case closed' type.

Finally, we include a third section of text in which we deliberately jump onto the bandwagon of speculation, and wax lyrical about the identity, evolution and biology of the cryptid concerned, tongue firmly planted in cheek. Sometimes we could only agree with the speculations that already exist in the literature, but on other occasions we invented novel hypotheses of our own. We hope that people who know the cryptozoological literature will recognise the inspirations for many or even all of our speculations, since we have frequently made deliberate homage or reference to published ideas. We have written these speculative sections as if we ourselves are confident, true-believer cryptozoologist authors, hence the strong, misguided 'anti-science' vibe that emanates from some of the text (and which, sorry to say, echoes comments genuinely made by real cryptozoologists).

Remember, then, that - if you see cryptozoologists referring to our speculations as if they're presented as serious, Heuvelmans-style explanations for given cryptids - it merely shows that they haven't read the text you're reading now. And it is not difficult to predict what cryptozoological reviewers are going to say about this book. They will dislike it for being flippant, disrespectful, silly, or for somehow helping to bring cryptozoology into disrepute. We certainly have somewhat mocked the ideas and contributions of some cryptozoologists, that is true. The fact remains that we have very good reason to do this: we hope that cryptozoologists learn the lesson we are trying to teach.

Acknowledgments Through citing sources as and where appropriate, we hope that we have given adequate credit to the people whose ideas and work we have alluded to or discussed. We would like to thank numerous people interested in cryptozoology, evolution, speculative zoology and scepticism for discussion, ideas and data, including Chad Arment, Max Blake, Matt Bille, Ed Bousfield, Chris Clark, Loren Coleman, Mike Dash, Adam Davies, Jon Downes, Richard Freeman, Craig Harris, Sharon Hill, Richard Hing, Carole Jahme, Daniel Loxton, Scott Mardis, Cameron McCormick, Jonathan McGowan, John Moore, Charles Paxton, Michel Raynal, Karl Shuker, Hugh Shanahan, Blake Smith, Dick Raynor, Ben Speers-Roesch, Jenny Taylor, Paul Vella, Mark Witton and Michael Woodley. While compiling the text, we frequently referred both to George M. Eberhart's monumental, two-volume *Mysterious Creatures: A Guide to Cryptozoology* (Eberhart 2002) and to Michael Newton's enormous *Encyclopedia of Cryptozoology: A Global Guide* (Newton 2005). We used these works so extensively that we should probably cite them in every single separate entry. That would involve needless repetition, so we want to give them adequate credit here.

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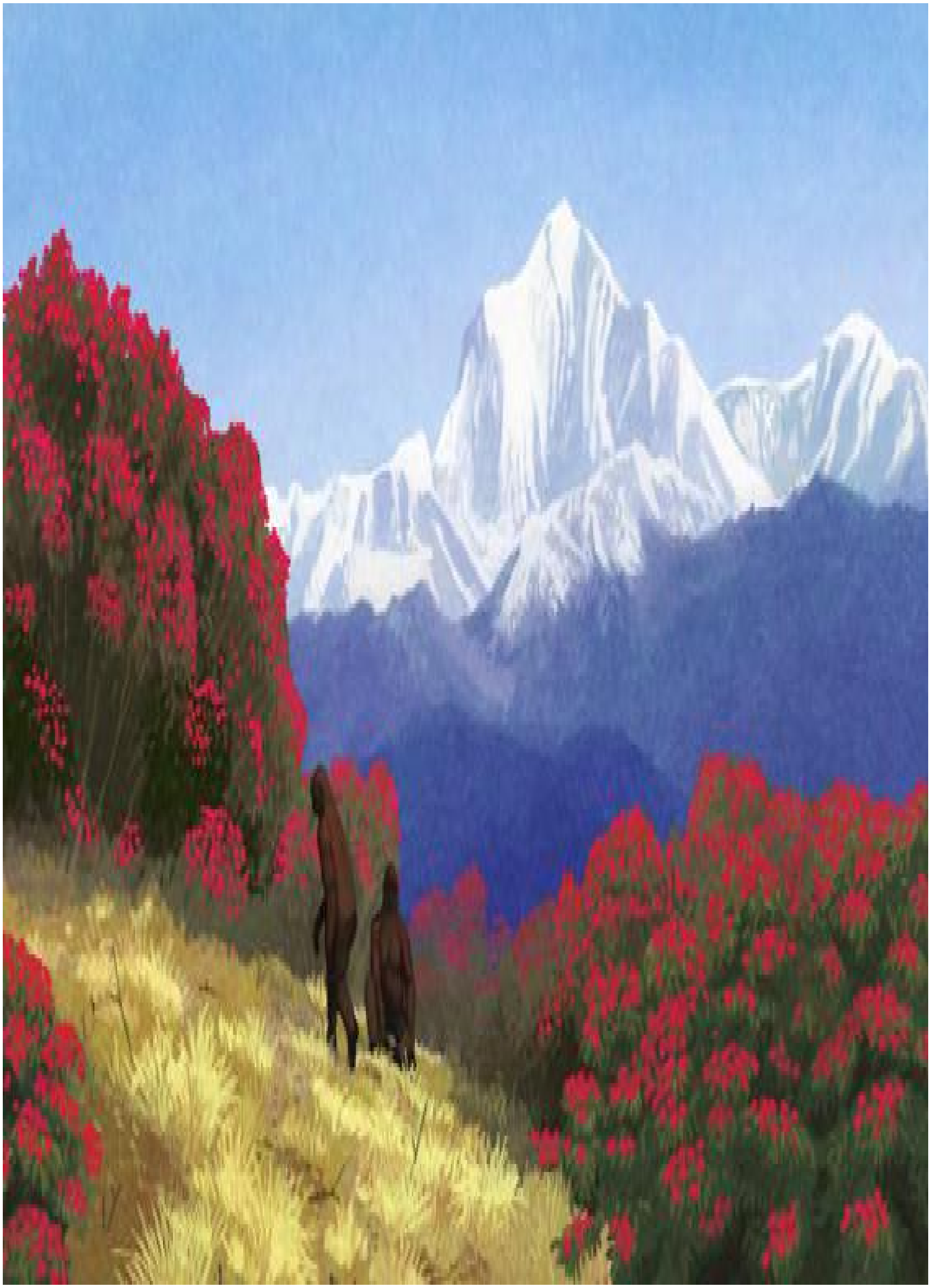
Yeti

Shaggy-furred, bipedal giant hominid of the Asian mountains



Location: Mostly associated with the Tibetan Plateau, but with accounts of similar creatures from across Asia
Time: known to European explorers from the 1920s onwards, but with many legends and ancient stories said to refer to the same creature **Welcome to Yeti-land!**

The Yeti is easily one of the most famous of mystery creatures. The Yeti of the cryptozoological literature is *not* the shaggy-furred, white snowbeast of Hollywood movies and popular art. Instead, it's a blackish, dark brown, or red-brown animal of the sub-temperate and temperate forests and mountainsides of the Himalayan Mountains and Tibetan Plateau, bipedal and 3m or so in height (though, to be fair, white Yetis have supposedly been reported from Tibet). Eyewitness and mythological accounts believed to describe the Yeti come from such countries as Russia, China, Nepal, Tibet and India. Across this large area, a variety of different local names are believed by cryptozoologists to describe the same creature (Shackley 1983). However, there is much variation in the size, form and behaviour of the hairy ape-men described across this area by witnesses and known from lore, so one interpretation favoured by some cryptozoologists is that we're actually seeing references to a huge cast of unknown hominids that range from shaggy, orangutan-like species to surviving *Dryopithecus* -like species, australopithecines, Neanderthals, members of *Homo erectus* and others (Coleman & Huyghe 1999).

This is the only logical interpretation *if* we choose to imagine all 'wildman' sightings and lore as encounters with real creatures. If, however, these sightings and lore combine mistakes, hoaxes and wishful thinking with the seemingly universal human belief that there have always been wild creatures or spirits that are somehow intermediate between people and the rest of the natural world, it is wisest to interpret all or most 'mystery hominids' as a sort of socio-cultural phenomenon that has been mistakenly 'de-mythified' by cryptozoologists. In view of the continuing lack of good evidence of any sort for Yetis and other mystery hominids, the latter is our preferred option.

Zoologists, biologists and other scientists interested in the concept of the Yeti as a real animal have universally regarded it as a primate, and as a great ape (that is, as a member of Hominidae, the group that includes great apes as well as humans). Its Asian distribution, the general idea that it's approximately similar in some aspects of appearance to orangutans, and the proposal that it might be related to (or a version of) the extinct Asian hominid *Gigantopithecus* have all combined to create the more specific idea that it's a pongine: that is, a member of the same great ape group as the orangutans, *Gigantopithecus* and so on. The Orang Pendek of Sumatra has been interpreted as a pongine for the same reasons.

There probably aren't yetis, really While the idea that the Yeti is a primate, a hominid, and a pongine sounds like a reasonable interpretation of the data, the fact is that - like so many detailed cryptozoological hypotheses - it relies on the integrity and reliability of the supporting anecdotal evidence. Accounts whereby mountaineers and explorers catch glimpses of distant Yetis are well known, as are cases where the same people find large, superficially human-like footprints in the snow. To date, however, reliable evidence that might provide support for the Yeti's existence remains unknown: there are no good photos or bits of film, the few photos of good footprints (notably the Shipton photos of 1951) almost certainly represent hoaxes, and claimed nests, hairs, bones and pieces of skin have all proved inconclusive or misidentified (e.g., Milinkovitch *et al*. 2004). For all the famous Himalayan expeditions that have gone in search of the Yeti, none have ever come back with any evidence (Prothero & Loxton 2013).

The Yeti is not really the hairy, ape-man-type hominid to the Himalayan people that are supposed to know it best. Instead, it is more amorphous, sometimes imagined or depicted as a humanoid creature that, in other cultures, might be imagined as a demon. This image of a Yeti is copied from a frieze in a Nepalese monastery.

In short, we regard the Yeti as an amalgamation of fleeting glimpses of known animals (including bears, takin and serows) with both the universal wildman archetype and with local Asian lore about humanesque, mountain-dwelling demons. Himalayan depictions of the Yeti do not all make it look like a primate. Some show tailed bipedal creatures with carnivore-type faces and protruding fangs (Davidson 1988).

Yetis: a speculative look As with Bigfoot, most of the speculations we might make about the Yeti (if we assume it to be real animal) have already been made in the extensive cryptozoological literature on the beast. Heuvelmans (1995) gave the Yeti the suggested scientific name *Dinanthropoides nivalis* and proposed that giant size evolved within a lineage of arboreal Asian apes, that the members of this lineage came down to the ground, and that specialisation for life in mountainous, snowy places encouraged them to become bipedal. He implied a close link between the Yeti and *Gigantopithecus* but did not think that these apes were close to orangutans. This scenario would require that Yeti bipedalism evolved independently from that seen in humans and other hominids, and it's contradicted by evidence indicating that hominid bipedalism first evolved in an arboreal setting, later being improved by those lineages that took to increased terrestrial life (see the Orang Pendek section).

While some authors have implied or argued that the Yeti and Bigfoot are members of the human lineage, we prefer the view that these are bipedal pongines, convergently similar to hominins in some ways but different with respect to the details of anatomy, gait and behaviour. Indeed, Yeti sightings create the impression of a hominid not all that different from the paranthropines, the more robust of the extinct, African australopithecines. *Dinanthropoides* walks bipedally with slightly bent knees, its body leaning more forwards than is the case in our species, and its long arms reaching down to its knees. Its resting poses more recall those of orangutans and gorillas than humans, and it can even move quadrupedally when scrambling up hillside and among large rocks.

Yetis are not reported to use tools. This may, however, be due to a lack of detailed observation. We know today that orangutans, gorillas and chimps all use tools in the wild: these behaviours went unknown for decades and only occur rarely. A strong jaw and massive, strong teeth make *Dinanthropoides* an expert at breaking fruits and nuts (Tchernine 1974). As a hominid adapted for temperate, often cool, habitats, *Dinanthropoides* is able to deal with warm summer conditions as well as far cooler, winter ones thanks to seasonal changes in the length and thickness of its pelt, though these changes don't happen across all Yeti populations. Our Himalayan Yetis are in their thinner, reddish summer coats (the scene depicts a time several decades in the past, when the Himalayas were more extensively covered by snow and ice than they are today).

If only more people were prepared to accept the reality of the Yeti, Sasquatch and Orang Pendek, they would realise that the supposed differences between humans and other great apes merely reflects the fact that the 'intermediate' taxa are extinct or scientifically unrecognised. *Yet again* blinkered, hidebound establishment scientists, more interested in sitting behind their computers than searching the world for real animals, are holding back scientific progress. THEY WILL BE SHOWN WRONG IN THE END!!!

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Orang Pendek

Sumatran hominid combining human and orangutan-like traits

Location: Sumatra
Time: known to Europeans from the 1800s onwards, but supposedly known to local people for much longer **Orang Pendek: what the literature says** Orang Pendek - a name that means 'short man' - is one of the few cryptids whose existence is taken seriously by at least a few qualified scientists. What is it? According to eyewitness accounts that date from the early 1800s to the present, it's a persistently bipedal, dark-furred tropical ape from Sumatra. It is reportedly able to climb and is intermediate in body proportions between orangutans and humans. Eyewitness reports are mostly (though not wholly) consistent, come from a remote region where the possible existence of a large, unknown primate is at least plausible, and some even come from people whose credentials and reliability are taken very seriously. Zoologist John MacKinnon - co-describer of the remarkable Saola - reported the discovery of Orang Pendek tracks in his 1974 book *In Search of the Red Ape*, for example, and primate expert and conservationist Ian Redmond has also said favourable things about the creature (Redmond 1995). Sketches made by eyewitnesses seemingly add an air of authenticity to some of the reported accounts, and hairs and tracks said to belong to the creature are also on record (Chivers 1995, Freeman 2004).

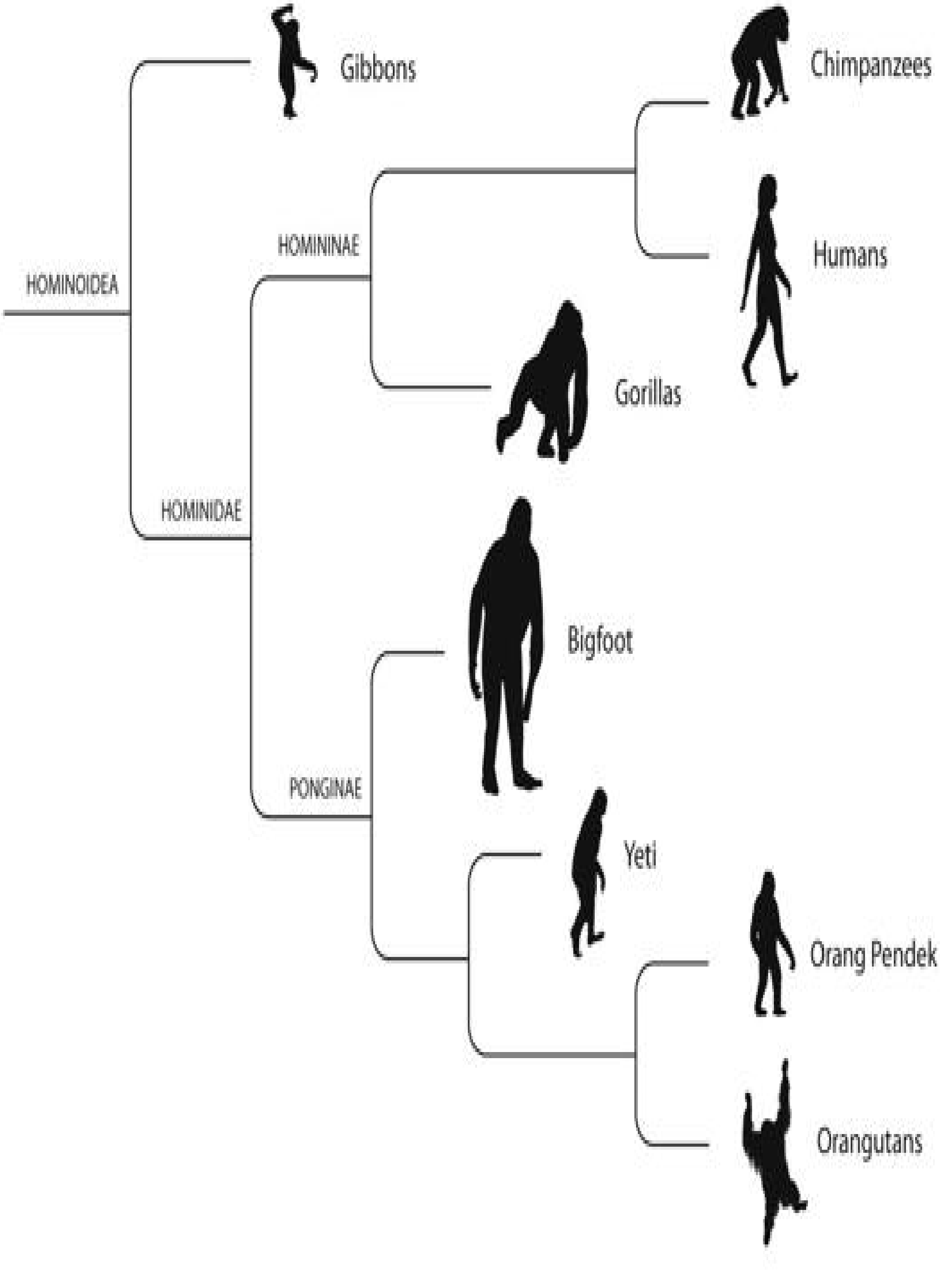
All of this evidence is in agreement with the idea that Orang Pendek is an ape: that is, a member of the primate group Hominidae. But what sort of ape might it be? Its presence in Indonesia and characteristic reddish-brown hair (sometimes described as long, and sometimes as short) both suggest that, if it's real, it might be especially closely related to orangutans and their fossil relatives, a group of hominids termed pongines or pongids. This appealing idea is about consistent with the limb proportions, reported behaviour and habitat preference of the Orang Pendek. In recent decades, belief in the reality of Orang Pendek has mostly been driven by on-the-ground researcher and journalist Debbie Martyr. Martyr has claimed excellent firsthand sightings and has also collected numerous accounts from local people (Martyr 1993), though she has not succeeded in obtaining good photos or other sorts of evidence yet. Inspired by her work, cryptozoological researchers from the UK and elsewhere lead regular expeditions to Sumatra in search of this creature (e.g., Freeman 2004).

A quick evaluation The idea that Orang Pendek is a genuine undiscovered pongine is appealing and widely accepted by cryptozoologists. However, for all the reasonable eyewitness accounts, there is a troubling lack of photos and none of the claimed supporting evidence - the hairs and tracks - has been properly evaluated, properly published, nor shown by anyone with the relevant qualifications to definitely be from an unknown hominid.

It should also be noted that the eyewitness accounts are not as tidy and consistent as implied. Reddish, orangutan-like fur is described in some accounts, but black, grey and tan fur is reported in others. The creature is said to be essentially human-like in some accounts but longer-armed and more ape-like in others, and some accounts refer to long manes of black or even blonde hair that cover the back down to the waist. There is also the troubling fact that some accounts tell of 'reversed' feet - a semi-mythological motif present in wildman-type cryptids worldwide. Because 'orang pendek' means, literally 'short man', we also know that the term is sometimes misinterpreted by Sumatrans as applying to short individuals of *Homo sapiens*. This very likely happened in the past, meaning that some Orang Pendek reports may well be descriptions of humans, especially those from unfamiliar, forest-dwelling tribes.

From the sceptical point of view that we endorse, there are therefore some obvious problems with Orang Pendek. The data pool of anecdotes and stories might be tainted with mythological entities of the sort present throughout human cultures, while the inconsistent reports, fleeting, sketchy nature of many accounts and lack of good supporting evidence suggest that even some of the best accounts might actually be misinterpreted descriptions of ground-walking gibbons, siamangs, orangutans or other primates. Having said all that, we remain intrigued about Orang Pendek and really hope that good evidence supporting its reality comes to light.

A speculative look at Orang Pendek Let's suppose for now that Orang Pendek is real, and that it really is a hominid, and specifically a pongine, related to orangutans but far more terrestrial. One of the most interesting things about orangutans (there are two living species: the Borean *Pongo pygmaeus* and Sumatran *P. abelii*) is that they are highly proficient, efficient, capable bipeds, able to walk erect with a striding, straight-kneed, human-like gait. This form of locomotion is mostly used in the trees (Thorpe & Crompton 2006, Thorpe *et al*. 2007a, b) but they are also capable of moving this way on the ground. Note that gibbons and siamangs - the hylobatids - are also bipedal when on the ground (Vereecke *et al*. 2006). Because orangutans (and hylobatids) are outside of the hominid clade that includes African apes and humans, their proficient bipedal abilities have led some primatologists to suggest that a bipedal habit was an ancestral feature for hominids, not one unique to humans and their closest relatives.


HOMINOIDEA
Gibbons
HOMINIDAE
HOMININAE
Chimpanzees
Humans
Gorillas
PONGINAE
Bigfoot
Yeti
Orang Pendek
Orangutans

A phylogenetic hypothesis for Hominoidea that shows the positions for Bigfoot, Yeti and Orang Pendek preferred by some authors. The tree shape shown here would provide strong support for the idea that striding bipedalism was ancestral for Hominidae, not unique to humans. However, it would require substantial convergent evolution between humans and pongines, especially in foot anatomy.

Indeed, the bipedality reported for several cryptid apes - including Orang Pendek, Bigfoot and Yeti - is especially intriguing within this context. If any or all of these creatures are real (that's a big "if", and one that we're not endorsing in this book), and if they are *not* members of the human lineage within Hominidae, their discovery would confirm this view: striding bipedality and human-like proportions must have evolved early on in hominids, and later been simply inherited by humans. Conversely, these features were lost in the lineages that led to modern chimps and gorillas. A major problem with this otherwise fine hypothesis, however, is that Bigfoot, Yeti and so on would all have to had convergently evolved human-like feet.

As always, an interpretation of Orang Pendek as a good pongine relies partly on 'picking and choosing' the best-sounding accounts, since there are other Orang Pendek reports that make the creature sound less like a pongine and more like a near-human sort of primate. Indeed, the supposed near-human quality of some Orang Pendek accounts has led some researchers to suggest or imply that *Homo floresiensis* - a relative of humans from the nearby island of Flores, still alive 18,000 years ago - has persisted in the region.

One possibility that explains the discrepancy in Orang Pendek reports is that we have been afflicted by a blinkered 'single species hypothesis', and that Sumatra is *actually* home to two or more distinct new hominid species, (at least) one being a pongine and (at least) one being a hominine. We are inspired here by the brilliant multi-species speculations promoted most forcefully by Coleman & Huyghe (1999). After all, Sumatra is a big place. Another possible explanation for the varied Orang Pendek accounts is that people are seeing hybrids between various of these undiscovered hominids. Hey, it happened in North America, right? (Ketchum *et al*. 2013).

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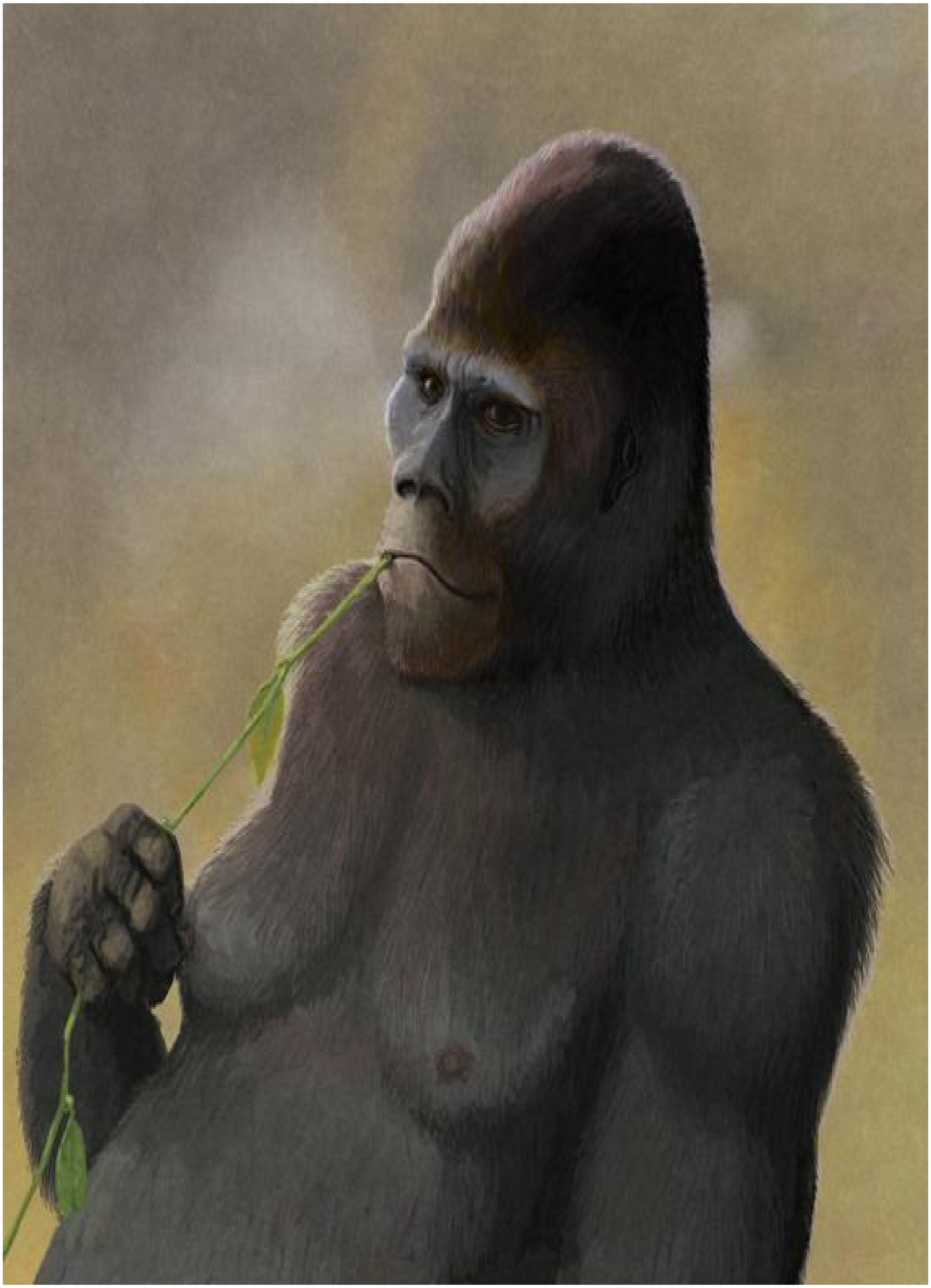
Bigfoot

Famous bipedal giant primate of the North American forests



Location: North America, from coast to coast and from north to south
Time: 1958 to present, though with pre-1958 accounts and First Nations tales and legends from throughout history linked to the phenomenon by some researchers
The Bigfoot phenomenon Bigfoot - also known as Sasquatch and, increasingly, as the Wood ape (and also by many, many additional local names) - is one of the world's ultimate mystery animals. It enthralls people because it's supposed to be big and formidable in appearance, because it inhabits the wild (and sometimes not so wild) parts of a well-populated, developed land mass (North America), because it's seemingly one of humanity's closest evolutionary relatives, and because there are widespread claims that it's a complex, cultured creature that may occasionally or even regularly interact with members of our own species. This giant primate is universally regarded as a member of Hominidae, the group that includes great apes as well as humans. Ideas differ, however, as to whether Bigfoot is a close relative of us humans, or part of the lineage that includes orangutans (read on).

Of course, this 'scientific' view of Bigfoot represents the modern, rationalised version of an age-old mythical stereotype that has existed in legends, traveller's tales and stories for thousands of years. People have *always* believed in hairy wildmen that live in the forests and mountains and are somehow intermediate between people and other kinds of animal life. Such creatures are known to cultures worldwide and their presence is recorded in the literature and art of Europe, Asia and Africa as well as North and South America, and even Australia. Cryptozoologists today might believe that they have compelling existing for the genuine existence of Bigfoot, but in fact our view of what the creature is supposed to be like is merely a modern, sanitised and seemingly plausible version of the mythical wildman.

Bigfoot accounts first became known in 1958 when Jerry Crew and his workmates reported the discovery of giant, human-like footprints in the extreme north-west of California. It's generally accepted today that these tracks were faked (Coleman 1995, 2003), but a large number of similar tracks as well as sightings of a dark-furred, hairy ape-man were reported during the 1960s and quickly made Bigfoot a national sensation. Several sightings and stories that pre-date 1958 now came to light, one of which was especially important in shaping our view of what Bigfoot is meant to look like. The account concerned came from a man named William Roe and apparently occurred in 1955. Roe explained that, from a distance of just 6 metres or so, he watched a giant, hairy, herbivorous ape pull branches to its mouth and strip off the leaves with its dextrous lips. Large, rounded breasts demonstrated its female identity. Roe's account was not reported until after 1958.

Another key account comes from 1967 when Roger Patterson and Bob Gimlin succeeded in filming another big-breasted Bigfoot at Bluff Creek in California (the same location where the Jerry Crew tracks were discovered). The footage shows an animal very similar to the one described by Roe and it has also helped cement the idea of what Bigfoot is meant to look like. Anthropologists, primatologists, special effects experts, motion analysts and cryptozoologists have argued about the authenticity of the so-called Patterson film for years and argument continues. Today, that piece of film remains one of the main lines of evidence used by Bigfoot proponents to support the creature's existence.

A brief, sceptical look at Bigfoot An enormous quantity of writing has been devoted to evaluation of the Bigfoot phenomenon. The key cases - the Patterson footage, the best of the footprints and so on - are complex and a huge amount could be said about them. We don't have space for that here so hope that our readers will forgive our terse treatment.

Firstly, while eyewitness accounts describing Bigfoot continue to come in thick and fast, their reliability and authenticity remains more or less untestable. Some surely do describe encounters with large, dark-haired mammals, but none are backed up by data which demonstrates that they are not mistakes, embellishments or outright hoaxes. Secondly, we know without doubt that the hoaxing of Bigfoot tracks, sightings and photographic evidence is ubiquitous. This issue is discussed and credited even by those who support the supposed authenticity of Bigfoot. The fact is, this issue is such a problem that there are not really *any* bits of 'clean' Bigfoot 'evidence': everything is tainted by the possibility of trickery. *Everything*.

Thirdly, despite decades of dedicated searching, despite the sheer inevitability that a giant primate would leave some good evidence of its existence *somewhere* in North America, and despite innumerable claims, false leads and rumours, a single good piece of compelling Bigfoot evidence - a bone, hair, DNA sample or scat - has yet to pass the test of authenticity. The hairs, droppings, nests, DNA sequences, tracks and so on that have been presented have all proved to be bogus, hoaxed, misinterpreted or inconclusive. None provide positive evidence for Bigfoot's existence, as they should given that it's an animal with a very specific identity (that is, a primate, and specifically a hominid).

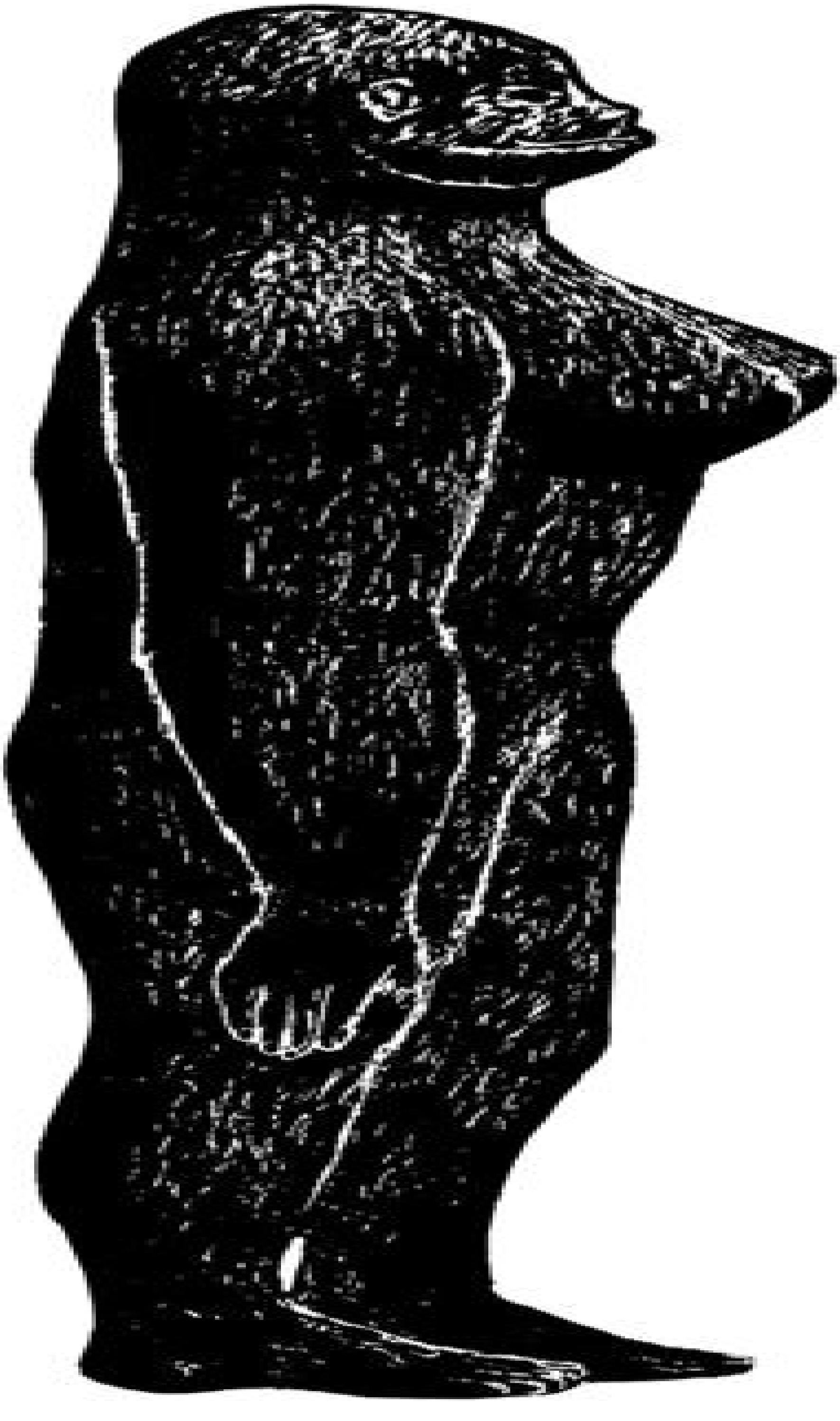
Of all the photographic evidence that has been presented, the best, by far, remains the Patterson film. While it does show what seems to be a believable, naturalisticlooking Bigfoot, circumstantial evidence has been building which shows that Patterson - with the help of local friend Bob Hieronymus - planned the footage as a (successful) get-rich-quick scheme (Long 2004, Loxton & Prothero 2013). Note that the Patterson Bigfoot is suspiciously similar to the creature described by Roe. An important point discussed at length by Loxton & Prothero (2013) - we independently reached similar conclusions in the first draft of this book - is that Roe's account was crucial in changing Bigfoot or Sasquatch from a tribe of wild humans into a hairy apeman-type creature. Now, all Bigfoot look like this: that is, like the Roe animal, or the Patterson one. This was not the case prior to the 1950s, nor in fact is there a compelling tradition or history of sightings of big, hairy apemen prior to this time, despite what Bigfoot aficionados say.

Could Bigfoot be real? As sceptics, we are not dismissing this possibility out of hand and dearly hope it to be true. But the fact is that there remains not a single piece of good evidence that can be really be held up in support of this idea.

A speculative look at Sasquatch As is the case few of the other creatures covered in this book, we don't really need to make any speculations of our own about the biology, anatomy or evolutionary history of Bigfoot because, you see, Bigfoot aficionados have done all of this for us in an extensive, detailed literature. Among the numerous books that discuss the supposed biology and appearance of Bigfoot, the best include Bindernagel (1998), Krantz (1999), Coleman (2003), Murphy *et al*. (2004) and Meldrum (2006). Alleged eyewitness accounts like Roe's and the Patterson film provide us with a clear view of what Bigfoot is meant to look like: it is a dark-furred hominid that combines features expected in a giant, gorilla-like herbivore with the more human-like aspects reported by witnesses.

Massively muscled, powerful limbs and a giant, well-muscled crest on top of the head are typical features. Females resemble (some) members of our own species in having large, rotund breasts (though in Bigfoot even these are covered in dark fur; an assuredly unexpected feature in *Homo sapiens*) but even female Bigfoots walk with the sort of gait typical of male humans and do not have the obvious waist and wider hips seen in many female humans. What, if anything, this means for the size of Bigfoot neonates is unknown. Note that the famous Albert Ostman report (Ostman claimed that he was kidnapped by a group of Bigfoot in 1924 and that he was able to make close, detailed observation of their anatomy and behaviour) is inconsistent on this count, since he described the adult female Bigfoot as broad-hipped. We can only assume that he observed a human-Bigfoot hybrid.

Supposed Bigfoot hand impressions made in mud demonstrate the presence of prehensile hands that are essentially human-like but with proportionally shorter fingers and a thumb that is not as muscular at its base nor as well suited for opposability as that of the human thumb. Small, mostly concealed ears and a 'hooded', human-like nose have also been described by witnesses.



Re-drawn version of Roe's obviously female Bigfoot from (apparently) 1955. It has been argued that this vision of the creature shaped all the ideas about Bigfoot that followed.

Overall, Bigfoot is remarkably human-like in such details as breast form, nose anatomy, and in its bipedal striding gait. For these reasons and others, some experts have concluded that Bigfoot is a close relative of humans. Others point to the fact that the knee is apparently kept slightly bent throughout the walk cycle (Krantz 1999) and that the foot is rather more flexible than that present in humans (Meldrum 2004, 2006). Perhaps these features show that Bigfoot is more likely another sort of hominid that is only human-like due to convergent evolution. Krantz (1999) argued that Bigfoot is most likely a new species of the fossil hominid *Gigantopithecus* that he wanted to name *G. canadensis*. We support this view, and - as discussed in the Orang Pendek account - we surmise that *G. canadensis* is a hominin-like pongine, an identification which strengthens the view that striding bipedality was a primitive evolutionary feature for hominids, inherited by members of several lineages but later lost by some. Exciting stuff, and sure to be confirmed as soon as wiley hunters bag their first Bigfoot… as they're sure to do any day now. Err, just like Bigfoot expert John Green said… back in, err, 1970.

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Loxton, D. & Prothero, D. R. 2013. *Abominable Science!* Columbia University Press, New York.

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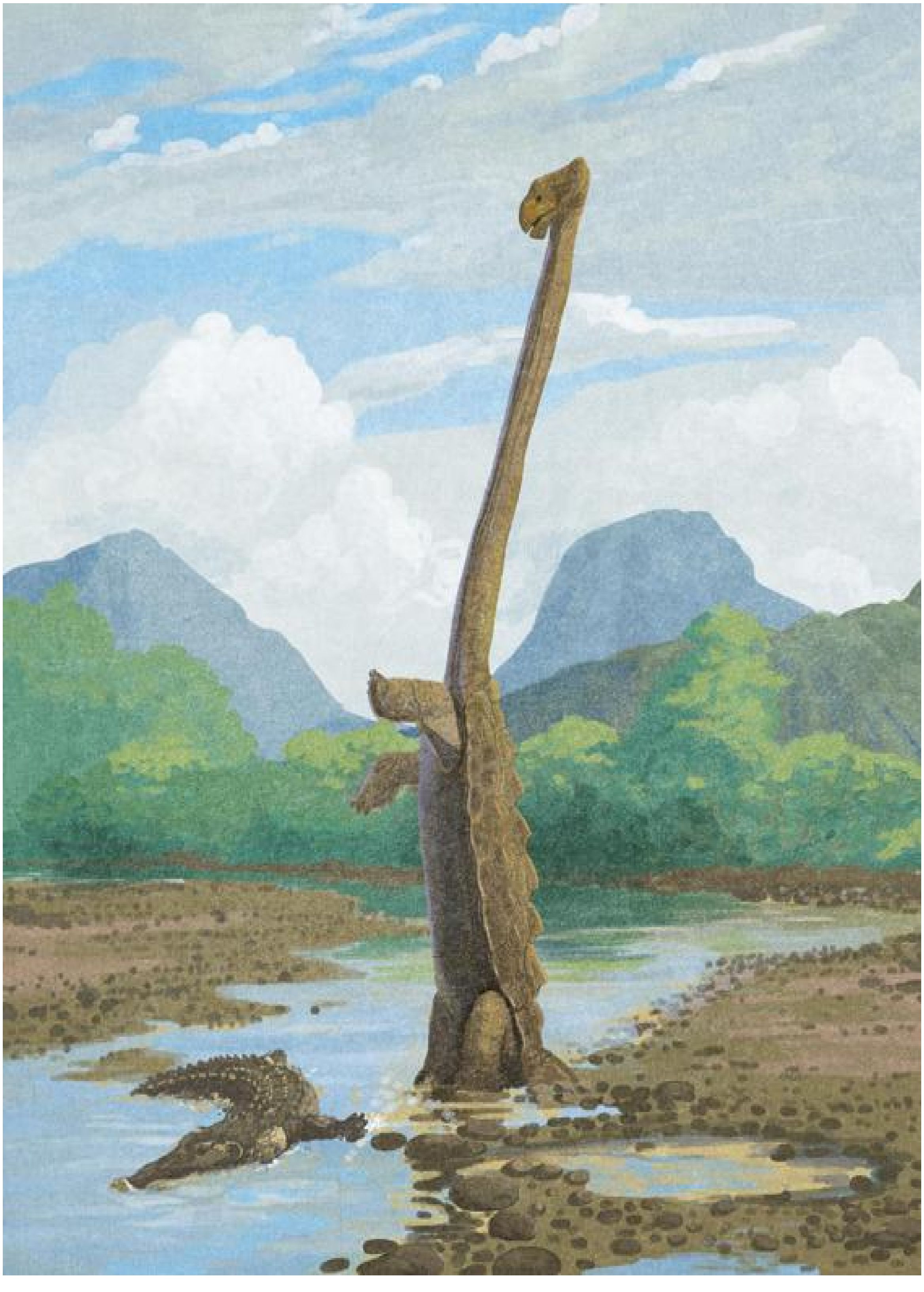
Murphy, C. L., Green, J. & Steenburg, T. 2004. *Meet the Sasquatch*. Hancock House, Surrey, B.C.

Row

Infamous "surrealist dinosaur of New Guinea"



Location: New Guinea
Time: a single account from some unspecified point in the 1930s or 40s

At home with the Kirrirri

The Row is one of several mystery beasts known only from a single account that is generally not taken that seriously, yet still it finds itself being repeated from time to time. Essentially, everything written about the Row comes from Heuvelmans's *On the Track of Unknown Animals*, where a whole chapter - titled 'The surrealist dinosaur of New Guinea' - was devoted to it (Heuvelmans 1958). Heuvelmans explained how American adventurer Charles Miller learnt of the Row while staying with the Kirrirri tribe of New Guinea. Horns supposedly belonging to the beast - 45cm long and 15cm wide at the base - were said by the Kirrirri to come from the tail-tip of a gigantic, lizard-shaped beast about 12m long, equipped with a "broad collar" of some sort, and with "large triangular scales... on its spine". Miller noted the similarity between the beast and various Mesozoic dinosaurs, but otherwise reported his scepticism. The name Row was said to be an onomatopoeic reference to the animal's call.

A few days later, however, Miller got to see a Row for himself. His wife reportedly fell to the ground on catching sight of the beast, paralysed with fear, while Miller succeeded in filming the creature during its appearance. Miller described a snaky neck, small forelimbs and the ability to rear up into a bipedal pose, a "snapping turtle-shaped beak", and irregular scales arranged like armour across its yellowish-brown body. Needless to say, neither the alleged film nor any one of the horn-like tail spikes have ever been submitted for examination.

There is no Row, nor was there ever

Heuvelmans was confident that the entire story and even the Kirrirri themselves were errant fabrications, created to make Miller's book more exciting. Miller later became a professional racing driver and pilot and, after the Great War, a stunt-pilot. Heuvelmans regarded it as most likely that the Row was a sort of chimaera, created by cobbling together anatomical details from various Mesozoic dinosaurs: the long neck of a sauropod, the frill of a ceratopsian, the plates of a stegosaur, and so on. Seeing as the Row account only comes from a single, fairly untrustworthy source, has not ever been reported by any other witness, and is a somewhat unbelievable beast in any case, Heuvelmans was surely right to reject the case as a hoax.

However, it is slightly ironic that Heuvelmans was so absolutely confident about the fictional nature of the Row, yet so keen to endorse the reality of other outlandish beasts that are not obviously more reliable (like the Long-necked seal, Many-humped sea-serpent, Many-finned sea-serpent or Con Rit, Super-otter, Super-eel and so on).

But what if… the Row were real?

It is fairly obvious that Miller's detailed and doubtless accurate eyewitness account of the Row has been repeatedly misidentified, mostly by authors who cannot help but imagine the creature within the context of a 'dinosaurian' template. A more detailed look - the references to a turtle-like beak, great irregular 'scales' and a snaky neck - reveal that the creature was no dinosaur, but a giant and morphologically remarkable terrestrial turtle, most likely a testudinid. That is, a tortoise.

Big, gnarly scutes and giant, subtriangular ones along the dorsal midline of the carapace - just like those seen on a variety of known turtles - readily explain the great armour plates that Miller described. The 'broad collar' that Miller described was no 'collar' at all, but the flaring opening to the carapace typical of giant tortoises. Little known is that some giant, island-dwelling tortoises (including some of the Galapagos species and the recently extinct forms from the Mascarenes) are (or were) incredibly long-necked, sometimes with necks similar in length to their shells. These are high-browsing adaptations that allow these large herbivores to reach well up into foliage. We conclude that the Row, evolving in isolation in a land devoid of high-browsing herbivores, took this giraffe-like feeding adaptation to an extreme. It was a veritable super-necked tortoise, able to increase its reach even further by standing and even walking bipedally. As part of the intact New Guinean fauna of the Pleistocene, the Row towered over the contemporaneous herbivorous diprotodontian marsupials, its only competitors being the climbing tree-kangaroos.

Giraffachelys was one of the last remnants of a guild of New Guinean browsing herbivores. As shown here, it easily out-reached contemporaneous diprotodontid marsupials, its only competitors being the arboreal tree kangaroos. It could even enhance its vertical reach by tipping backwards into a vertical pose.

Miller's New Guinean giant, super-necked tortoise was surely one of the most remarkable members of its group to ever walk the Earth. Sadly, a lack of modern sightings show that it is surely extinct today. We urge people to look more kindly upon Miller's insightful writings, and suggest that the Row - *Giraffachelys milleri* - be named in his honour.

Heuvelmans, B. 1995. *On the Track of Unknown Animals*. Kegan Paul International, London.

Canvey Island Monster

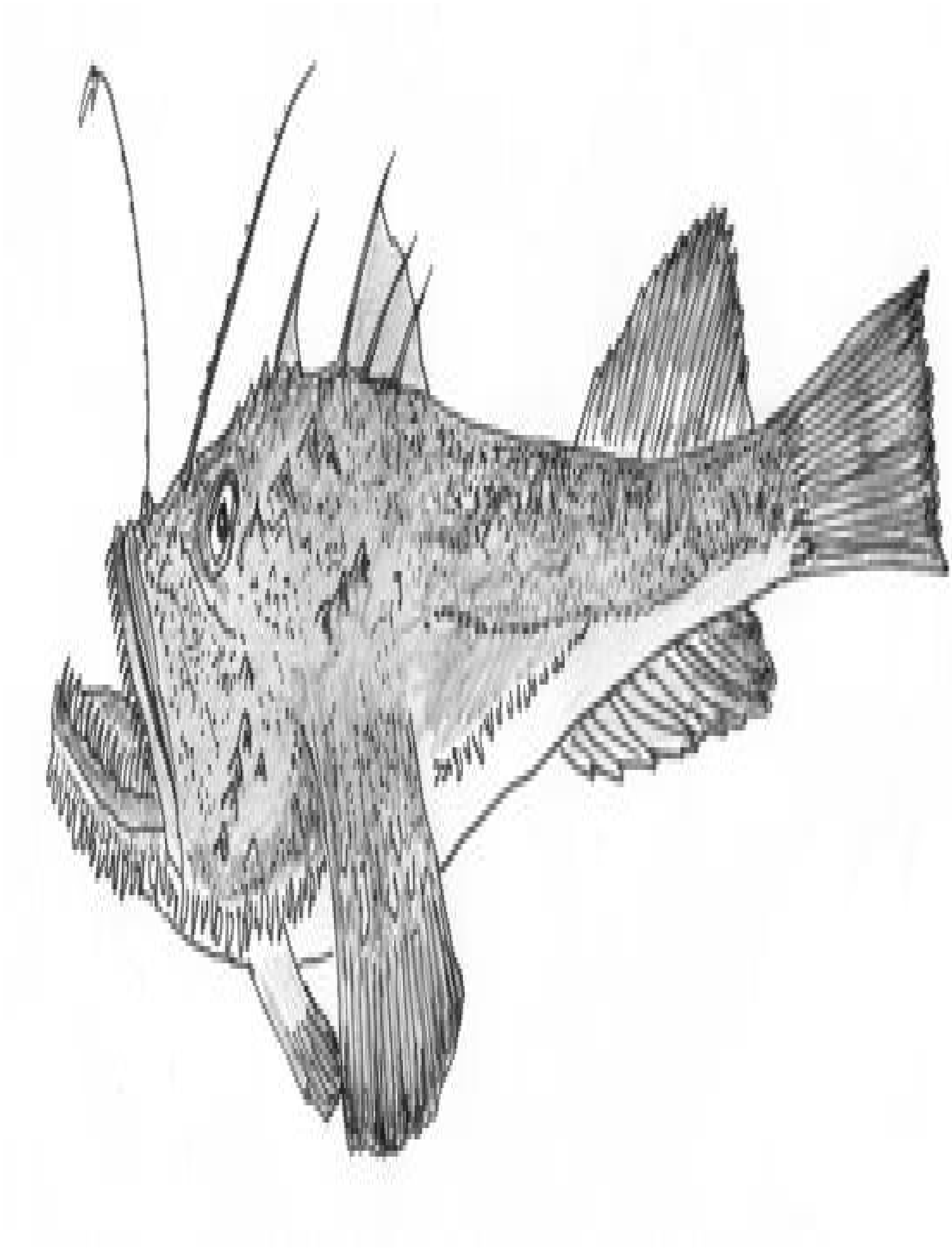
Mystery British carcass-monster… a "fish with feet"

Location: Canvey Island, Essex, England
Time: 1953 and 1954

As is clear from the contents of this book (and from just about any book that discusses mystery animals), the weird, partially decomposed bodies of marine animals that have washed ashore on beaches throughout history have all too frequently been hilariously misinterpreted. Because these carcasses often turn up in remote locations, because they are large, smelly and disgusting, and because they are (truth be told) rarely cause for immediate action or alarm on the part of busy working scientists, they are frequently destroyed, buried or lost to the sea before experts actually get to look at them. And to be an 'expert' on weird animal carcasses you have to be an experienced biologist who knows a lot about the anatomy of diverse creatures *and* an expert on decomposition. Such people are actually few and far between.

Among many weird 'sea monster carcasses' is the bizarre Canvey Island Monster, the name given to a creature that washed ashore in England in 1953. It was about 80cm long and possessed bulging eyes, gills and large hindlimbs with five-toed feet. Forelimbs were absent. The name was also used for a second, larger specimen (1.2m long) discovered in 1954. Described as "fish with feet" in the local newspaper, these weird animals were imagined to be unique undersea bipeds, perhaps looking something like giant marine frogs with straight legs and no forelimbs.

The monster explained In reality, there are enough clues here for us to know exactly what the carcasses were: they were specimens of *Lophius piscatorius*, a large anglerfish that occurs around the coasts of England as well as elsewhere in the North Atlantic and Mediterranean. A surviving photo of the 1954 specimen confirms this identification. *Lophius* is huge, with big females reaching 2m in total. *Lophius* is famous for its intimidating appearance. The scaleless body is flattened and covered in tassels that aid camouflage, the mouth is enormous and as wide as the entire body, and the pectoral fins are much enlarged, wide, muscular organs that project outwards and backwards. Dorsal spines, a long lure on the head and sharp, pointed teeth complete its appearance. Common names that take account of these features include frogfish, fishing-frog, sea-devil, goosefish and wide-gab.



Lophius : freaky, ugly and unfamiliar to many.

The reason we're so interested in a thoroughly explained, discounted 'mystery animal' is that it serves as a nice example of how the carcass of a known animal can become transformed into a fantastic monster by uninformed parties. A big, familiar fish (one that even forms the basis for a commercial fishery in the Irish Sea) became morphed into a bipedal, marine frog-monster. It's not difficult to think that many outlandish 'monster carcasses' from throughout history evolved in similar fashion, it's just that the original descriptions aren't precise enough to allow identification in the same way, nor do photographs of these carcasses exist. Example: the incredible Orford Ness monster carcass reported in 1962. This was reportedly tadpole-shaped, 6m long, and equipped with two pairs of short flippers (Dinsdale 1966). Having said that, critical and sceptical analyses of sea monster carcasses have generally found that many can be explained if only people try hard enough (Roesch 1997, 1998a, b, 1999). When the carcasses can't be explained, it's usually because sufficient information wasn't recorded.

Megafroglet: a case study in speculative evolution Imagine that we never knew the actual identity behind the Canvey Island Monster. What might we think? Equipped with a massive, broad head, bulging eyes, and large hindlimbs and webbed feet, the Canvey Island Monster is presumably a giant marine frog that has retained the gill-breathing habit of tadpoles but has otherwise undergone partial metamorphosis. Frogs and toads (grouped together as anurans) are typically regarded as restricted to freshwater habitats and as unable to dwell in marine conditions. However, this is not wholly accurate. In fact, several anurans can tolerate brackish conditions and there are even species (including the Crab-eating frog *Fejervarya cancrivora* and Mongolian toad *Pseudepidalea raddei*) that have been seen swimming in the sea (Schmidt 1957).

We suggest that an ancient aquatic anuran from the Mediterranean region was forced to adapt to saline waters during the Messinian Salinity Crisis of the Miocene epoch. Trapped in one of the saline lakes of the drying Mediterranean, this proto-Canvey creature became a giant lurking predator, fully 'pre-adapted' to marine conditions, and with a body plan fundamentally constrained due to the unusual developmental pathway that anurans are locked into. It must have eked out a living in a special refugium, finally escaping into the Atlantic when the Mediterranean was breached during the Zanclean Flood 5.3 million years ago. The forelimbs withered away over time but a fully aquatic lifestyle allowed the creature to rely on enormous hindlimbs when locomoting across the lake and (later) sea floor. Its poorly ossified skeleton (even more reduced than the heavily reduced one ancestrally present in anurans) and great size mean that, once stranded on land, it collapses into a wide, flattened shape.

Remarkably similar creatures - the Froglets - dwell on the moon in the children's television series of the 1960s and 70s, *The Clangers*, and were clearly inspired by the reality of the Canvey Island Monster. Accordingly, we name this beast *Megafroglet canveyensis* and recognise it as one of the most remarkable of anurans that has ever evolved. Of course, what we say here is ridiculous nonsense. But it's actually pretty similar to some of the scenarios that cryptozoologists have invented in order to explain such imagined beasts as merbeings and the Con Rit.

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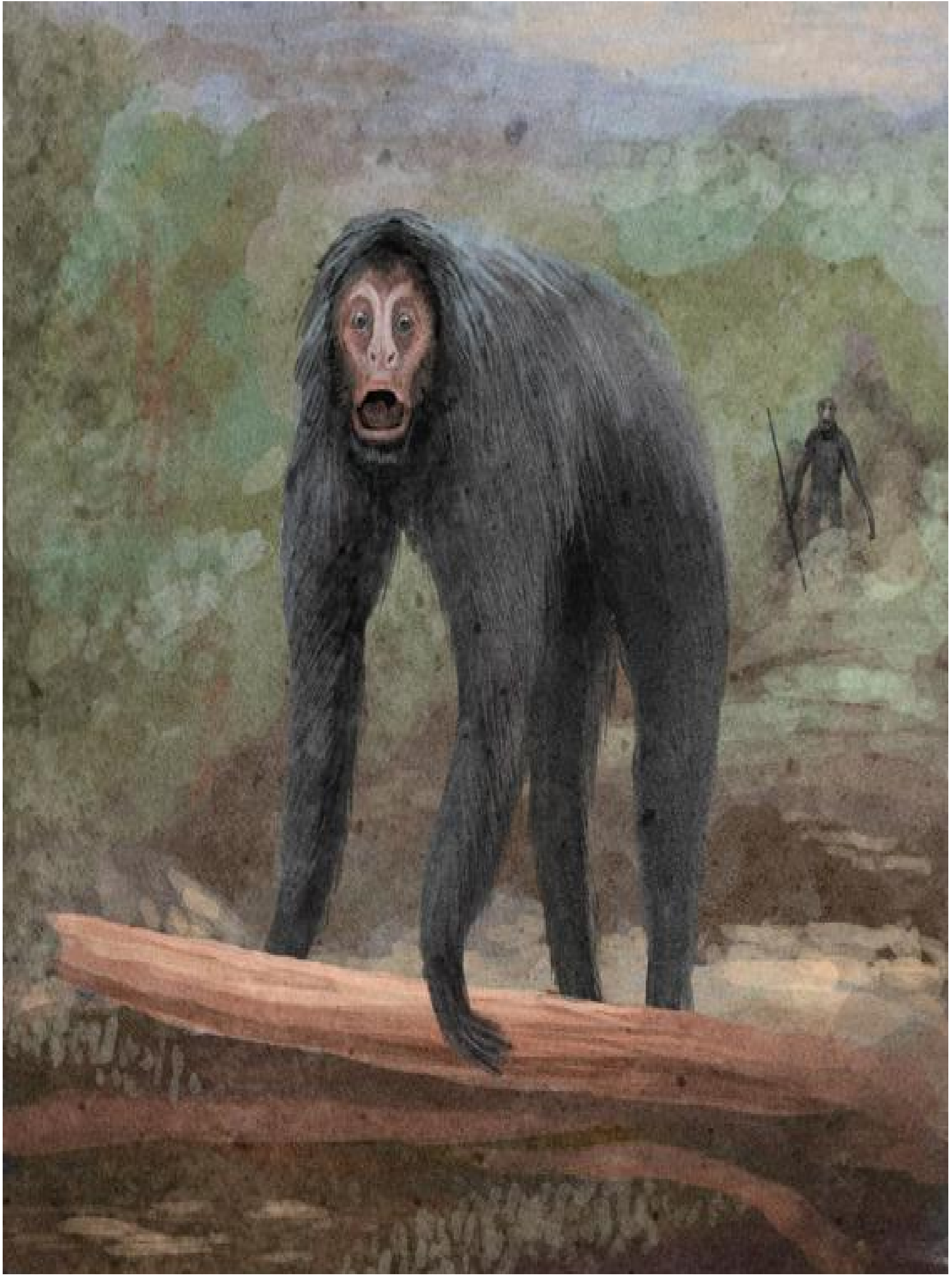
De Loys's Ape

Alleged 'ape' encountered on a doomed expedition



Location: a remote forested region on the Colombian-Venezuelan border, though with alleged evidence reported from across South America
Time: 1929

A South American 'ape'

Arguably one of the most fascinating episodes in cryptozoological history involves the alleged South American primate species *Ameranthropoides loysi*, proposed as a new species by anthropologist George Montandon in 1929. This large, allegedly new primate species is represented only by a single photograph, allegedly taken on the Colombian-Venezuelan border by Swiss geologist François De Loys in 1920. De Loys claimed that he and his party encountered two of these bipedal, erect-walking primates, shot one of them dead, and propped its body up on a wooden crate before taking the famous (and famously creepy) photograph so familiar from books on monsters and mysteries.

The creature was supposedly very large (De Loys said 1.5m tall), tailless, and with a human-like tooth count. Combined with its erect form of habitual bipedality, it was - according to De Loys - wholly different from all known South American primates (or platyrrhines), and perhaps a convergently evolved South American 'ape'. The story has been discussed several times in the cryptozoology literature, most usefully by Heuvelmans (1995), Shuker (1991, 2008) and Urbani & Viloria (2009).

A sceptical look at De Loy's 'ape'

Montandon's naming of *A. loysi* and De Loy's alleged discovery of it were both treated with immediate scepticism across Europe (Keith 1929). The fact that no part of the specimen had been retained was one problem. De Loys argued that the remains had either been lost due to accident, or became destroyed due to mistreatment (the skull, for example, supposedly corroded away after being used as a salt container).

This all meant that none of the supposedly unique features of the animal could be checked or confirmed. The unusual tooth count could only be confirmed by a look at the skull (and this was lost), the lack of a tail couldn't be checked because the animal had only been photographed from the front, and the alleged large size of the animal was difficult to be confident about because the photographs did not include a human for scale. All in all, highly suspicious (there have even been claims that the photograph could not have been taken where De Loys said it had, due to discrepancies with the flora). And another problem comes from the fact that the creature featured in that famous photograph is not exactly enigmatic or truly unidentifiable: it looks exactly like the creature many people said it is… a White-fronted spider-monkey *Ateles belzebuth*.

More insidiously, it has been argued in recent years that Montandon endorsed and required the creation of a large, vaguely human-like South American primate because - as a supporter of the then seriously regarded 'hologenesis" hypothesis - he needed a primate that could serve as an ancestor of South American humans. Hologenesis - widely regarded as racist today - was the school of thought proposing that the different racial groups of *Homo sapiens* did not share a single ancestry but descended independently from different branches of the primate tree. Montandon seemingly needed an ancestor for 'red' people (native Americans), and *Ameranthropoides* was used as a 'missing link' in their evolution.

This outrageous suggestion went mostly ignored until the 1990s when Loren Coleman and Michel Raynal drew attention to the possibility that *Ameranthropoides* had been specially 'invented' to fit this erroneous model of evolution (Coleman 1996, Coleman & Raynal 1996). Montandon was killed by the French Resistance in 1944, well known as an outspoken racist with strong 'ethno-racial' views (Coleman & Raynal 1996). Possible support for the idea that *Ameranthropoides* was an outright hoax comes from a letter penned in 1962 by Enrique Tejera, a friend of De Loys who, at one point, claimed to have seen a live *Ameranthropoides*. In the letter, Tejera denounced the hoax, saying that the animal photographed by De Loys was a deceased pet spider monkey that had been adopted in the jungle (Shuker 2008, Urbani & Viloria 2009).

Today, several cryptozoologists hold out hope that De Loys really did photograph something novel and special and they point to local legends of big, bipedal primates from northern South America, and to rumoured halfmemories of additional photos of the 1920 carcass, as evidence that supports this view (Shuker 1991, 2008). We are confident, however, that De Loy's famous photo shows a dead spider monkey sat on a crate, the only remarkable aspect of this story being the audacity of those who thought that they could use a dead monkey to cheat the scientific world.

A world where *Ameranthropoides* is real Let's now suppose for the purposes of this book that De Loy's ape is a real animal. *Ameranthropoides* is presumably a close relative of *Protopithecus*, an especially large fossil platyrrhine known to have inhabited Brazil during Pleistocene times (Hartwig & Cartelle 1996). Good bipedal abilities are present in various platyrrhines and *Ameranthropoides* represents an extreme member of the group: the largest, most short-tailed (in fact, it is tailless) and most bipedal platyrrhine ever to have evolved. Given that the large-bodied platyrrhines known to have evolved elsewhere in the group (spider monkeys, woolly monkeys and muriquis) have long, prehensile tails, the complete absence of a tail in *Ameranthropoides* indicates a lengthy history of terrestrial evolution, but we are unsure as to whether the enhanced bipedal abilities of this species evolved in the trees before the animal came down to the ground, or whether its ancestors came to the ground and only then became proficient bipeds.

Platyrrhines include some of the most intelligent and adaptable of all primates. Capuchins exhibit remarkable adaptability when it comes to tool-use and problem-solving in the wild and might be similar in intelligence to chimpanzees. In view of this, the especially big *Ameranthropoides* is probably also especially intelligent, perhaps routinely using tools and seeming almost human-like when foraging, using weapons, and breaking into foodstuffs. We can only hope that future field observations of this rare and enigmatic giant platyrrhine will provide valuable insight into its behaviour and lifestyle.

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Chupacabra

Terriying 'goat-sucker' of the Hispanic world

Location: Puerto Rico, Guatemala, Mexico, parts of the USA, Spain and Portugal
Time: mostly 1991-1996

Chupacabras: the lore The Chupacabras (or Chupacabra) has become the great monster of our time, even though there has never been any clear idea of what it looks like, nor do accounts or stories referring to it describe the same sort of creature. In fact, the Chupacabras can be imagined as more of 'event' than a cryptid: some researchers have suggested that the Chupacabras phenomenon is a cultural event endorsed by Spanish-speaking people because they have come to regard it as an integral part of being Hispanic. Early accounts associated with the name Chupacabras (these accounts comes from Puerto Rico, and were mostly reported between 1991 and 1995) describe encounters with vaguely humanoid entities, with 'aliens' recalling the greys of the UFO abduction literature (though kitted out with spikes on the back), or with chimaeric winged, kangaroo-like creatures that can change colour. Bipedal, gorilla-like and bat-like Chupacabras were reported, as was a creature described as "a giant falcon with a human face"! (Newton 2003). Accounts were reported from Guatemala in 1995 and 1996, and from Mexico, Florida, Arizona, Texas, California, Costa Rica and even Spain and Portugal from 1996 onwards.

More recently, people have taken to applying the term to weird, bluish-skinned, hairless members of the dog family observed in Texas. We know from film and recovered carcasses that these 'blue dogs' really exist, though exactly what they are and why they're hairless remains mysterious (genetic tests indicate that they are wolf x coyote hybrids). All of these accounts - those of the humanoid 'aliens', the kangaroo-type monsters, and the 'blue dogs' - have been associated with attacks on sheep, goats and other livestock that involve neck injuries and, apparently, draining of the blood.

Is there really a mystery here?

As is clear from these many disparate descriptions, there is no single Chupacabras creature that warrants explanation. The stories about humanoid entities are certainly or almost certainly fabrications. In fact, the most famous of them - the original 'humanoid Chupacabras' account (made by Puerto Rican inhabitant Madelyne Tolentino in 1995) - is very probably a hoax invented by Tolentino after she saw the terrible 1995 sci-fi movie *Species* (Radford 2011). As noted above, the 'blue dogs' are real but the use of the label Chupacabras for these animals seems incorrect, and they are nothing to do with the Chupacabras as originally envisioned.

With the 'humanoid aliens' and blue dogs' eliminated, what remains of the Chupacabras mystery? Not much: most of the livestock attacks attributed to the monster can more plausibly be linked to the activities of feral dogs and even wayward humans. A small number of weird accounts remain. Given that just about every single one describes a new sort of creature, we feel it most likely that all are hoaxes or mistakes that emerged as a consequence of hysteria and fear.

But… what if?

Back during the early 1990s - the height of Chupacabras Fever - it was seriously proposed by some cryptozoological investigators that Chupacabras sightings might best be explained by the existence of an unknown, Puerto Rican mystery mammal, perhaps vaguely humanoid in form and perhaps possessing the spines, large hand claws, fangs and other features described in some eyewitness accounts. Weird, spiny sloth-type mammals, predatory primates, and large, semi-bipedal tree porcupines were all hypothesised to life by certain researchers at this time (we have their names on file but will save embarrassing them for now). Here, we would like to propose our own radical and thoroughly compelling explanation for the Chupacabras phenomenon…

Clearly, the Chupacabras is a semi-bipedal, nocturnal, predatory marsupial, the likes of which is unknown to science. Equipped with a long, robust tail, forelimbs proportioned something like those of a primate, and an ability to leap and climb, this sharp-toothed predator (which we name *Deinoroo caprophagus*) is convergently similar to the Australasian macropods in some respects but is actually a very large opossum. Indeed, the formidable dentition, strong jaws and enlarged upper canines of opossums required little evolutionary modification to produce a large-bodied predator.

Equipped with a thin, dark grey or blackish pelt, forward-pointing eyes, and a svelte, often bony body, *Deinoroo* is a haunting vision that frequently strikes great fear into those who encounter it. And they may be in danger from it… while mostly visiting human settlements to prey on chickens, rabbits, goats and sheep, it is probably only a matter of time before this predator loses its natural fear of humans and makes its first human kill. *Then what will we do?*

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Waitoreke

Otter-like mystery mammal of New Zealand

Location: South Island, New Zealand
Time: 1773 to early 1970s **Land of the Waitoreke** Ever since the time of Captain Cook's visit to New Zealand in 1773, there has been talk of a mysterious aquatic mammal on New Zealand's South Island, variously likened to a beaver, otter or water-going dog or cat. A bushy-tailed mammal, similar to a domestic cat in size, was supposedly seen at Dusky Sound in the south-west corner of South Island and has sometimes been regarded as the first Waitoreke sighting. These accounts are surprising because New Zealand entirely lacks native terrestrial mammals (except bats).

The name 'Waitoreke' was first reported by Walter Mantell in 1848 who learnt of it from the local Maori. There are several suggested translations for the name, one being "spurred one who dives into water", though quite what the 'spurs' relate to has never been explained (though read on). Another suggested translation is "disappearing demon" and yet another is "the one with wrinkles". According to Mantell, the waitoreke has a head and body length of two feet, possesses a brown coat and bushy tail, has short, stocky limbs, and has a head shape intermediate between that of a dog and a cat. A 1957 sighting reported by a Mrs O. Linscott described small eyes, rounded ears and short whiskers. The famous New Zealand naturalist Julius von Haast reported otter-like footprints in 1861 that he discovered near the Ashburton River. He interpreted them as Waitoreke tracks though there is suspicion that they were a hoax made by a member of his party. Supposed Waitoreke sightings were reported sporadically throughout the 20th century until the early 1970s.

Explaining the Waitoreke Inevitably, some authors have suggested that the Waitoreke might have been an amphibious member of either of the two mammal groups typically associated with Australasia: the egg-laying monotremes (Heuvelmans 1995) and the frequently (but not ubiquitously) pouched marsupials. Seeing as both groups lack a fossil record on New Zealand, the discovery of a surviving lineage of either on New Zealand would be a major discovery. One unusual feature of monotremes is the presence of a venomous spur on the ankle: is it coincidental that "spurred one" is one of the suggested translations for the name Waitoreke?

Intriguingly, the fossils of terrestrial mammals are now known from New Zealand. These comes from 19-16 million-year-old rocks of the Bathurst region and belong to a lineage of mammals that were neither monotremes, marsupials nor placentals. Rather, they seem to belong to an additional lineage that must have evolved independently from within the Mesozoic mammal radiation (Worthy *et al*. 2006).

Another suggested explanation for Waitoreke sightings is that they were not merely of otter- *like* mammals, but of true otters: specifically, of Hairy-nosed otters *Lutra sumatrana* from Indonesia, taken to New Zealand by seafaring fishermen. This might seem like a sensible proposal, but it's unsupported by evidence (who says that Indonesian fishermen ever travelled to New Zealand?) and is also inconsistent with some of the anatomical features attributed to the Waitoreke, like its bushy tail. However, one Waitoreke account describes bank-sliding behaviour of the sort typical for otters, and otter-like burrows were apparently discovered on the Taieri Plain in 1973.

Yet other suggested explanations for the Waitoreke are that the sightings were actually of introduced beavers, of wayward sea lions, fur seals, or elephant seals, or a previously undocumented population of one of the water rat species otherwise known from Australia or New Guinea. Finally, the most curious suggestion of all is that the Waitoreke might represent a descendant of *Procynosuchus*, a Permian-age animal vaguely related to mammal ancestors but unrelated to any of modern mammal groups. Its fossils are known from Germany and from several sites in Africa and a few aspects of its anatomy suggest that it might have been amphibious. Needless to say, there are no good reasons for taking this suggestion seriously.

New Zealand: land of mammals If we assume that the Waitoreke was or is real, and that it really was an amphibious or aquatic mammal, how might it be explained? Hardly anything is known about New Zealand's fauna between the end of the Cretaceous and modern times. The moa and other recently extinct animals are not old at all, and only recently have fossils been described that have any sort of antiquity. Besides the Bathurst mammal, these consist of fossil waterfowl, rails, waders, pigeons and other birds. All of these remains, however, are less than 20 million years old and are thus expected to represent 'modern' groups. It remains the case that the door is still wide open as goes the history of New Zealand's fauna prior to Miocene times.

With this in mind, we conclude that the Waitoreke is evidently a post-Miocene remnant of an endemic mammal group that moved to New Zealand prior to the time when Zealandia - the once enormous landmass that includes New Zealand and various (now mostly submerged) land areas - split away from the rest of eastern Gondwana. That event occurred during the Late Cretaceous, pulling the Waitoreke's ancestry back to this time.

Of the several fossil mammals present in the Cretaceous fossil record of eastern Gondwana, all are part of a group (the Australosphenida) considered to include the monotremes. As well as occurring throughout what is south-eastern Australia, australosphenidans also inhabited Cretaceous Zealandia. It's important to note that they lacked the more recently evolved specialisations of echidnas and platypuses, and instead looked more like scurrying, shrew-like mammals, most of which were less than 30cm long. The Waitoreke - properly named *Zealandotherium mantelli* - belongs to an australosphenidan group that evolved paddle-like tails, large size and a short, robust snout. While these features are novel (albeit in part convergent with those evolved in platypuses), *Zealandotherium* retains the ankle spur originally widespread across mammals (Hurum *et al*. 2006). Distant relatives of *Zealandotherium* evolved in even more surprising directions (see the Gambo section).

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Beast of Gévaudan

Rapacious, wolf-like carnivore that terrorised France

Location: Lozère, south-eastern France
Time: 1764-1767

The amazing history of the Beast The tale of the Beast of Gévaudan is one of the most interesting and intriguing of cryptozoological mysteries, not least because it involved the deaths of over 70 people. Gévaudan is the old name for a part of south-eastern France that approximately relates to modern Lozère. The events concerned predominantly occurred between 1764 and 1767 when people (mostly children) were attacked and sometimes killed by an enormous, wolf-like beast. Said to kill by knocking people over and taking savage bites from the throat or face, the Beast was variously described as reddish, with black stripes, with a large, long-snouted head, short, pointed ears and with either a long or short tail. Prodigious leaping abilities, bullet-proof skin and a supposed ability to stand bipedally were also described.

A combined military and volunteer effort of 1764, led by Captain Jean-Baptiste Duhamel, failed to kill the beast, as did the employment by King Louis XV of a famous wolf hunter called Denneval.

One beast, several, or many?

Efforts to track down and kill the Beast were not unsuccessful, though none of the things that happened ever 'solved' the mystery. Several large wolves - believed to be responsible for the Beast's attacks - were killed in17 65 and17 67, and a creature identified as a striped hyena *Hyaena hyaena* was also killed in 1767. Suggestions that trained dogs, wolverines, escaped baboons and human murderers wearing animal skins were responsible for some of the attacks have been made from time to time. The skin of what seems to be the same hyena as the one killed in 1767 was apparently on display in Paris until 1819, seemingly confirming that a wayward (presumably escaped) hyena was indeed roaming the French countryside at this time. A sustained, bloody persecution of Catholics by Protestants - perhaps involving trained, armour-plated dogs - has also been suggested as an explanation for the killings (Eberhart 2002).

In view of all of this, we agree with suggestions that there was no single 'Beast of Gévaudan'. Rather the case involves various different killers, all of which became inadvertently combined to form the legend.

The Beast alive!

Let's now suppose that there *was* a single Beast of Gévaudan corresponding to the creature hazily described by witnesses, and intimated to exist by some cryptozoologists. Thanks to an excellent illustration of the Beast produced in 17 65, we have a clear idea of what this creature looked like. It was vaguely wolf-like in size and form, but was obviously not a wolf nor any member of the dog family since it had recurved claws on its hands and feet, a far deeper chest and shallower belly, and a long, slender tail with a tufted tip.

Rather than being a singleton, creatures of this sort have in fact been reported throughout European and Russian history: the Girt Dog of Ennerdale in England (reported in 1810) was another example, as was the County Cavan beast of Ireland (reported in 1874), the Trosna creature of the Orel Oblast region of eastern Russia (reported in 1893), and the Plovdiv creature of Bulgaria, report to have killed 16 people in 1993. As proposed by Gable (1997), these giant, carnivorous mammals - Gable termed them 'maulers' - are surely giant mustelids, closely related to martens and wolverines and noted not only for their size but also for their agility, elongate bodies and bloodthirsty behaviour. Gable (1997) proposed that the mauler is an unrecognised subspecies of the Pine marten Martes martes. We feel it far more likely that these creatures in fact represent an entirely new giant of terrestrial, marten-like mustelid - related to wolverines but far more cursorial - which we here name *Arenotelicon horribilis*.

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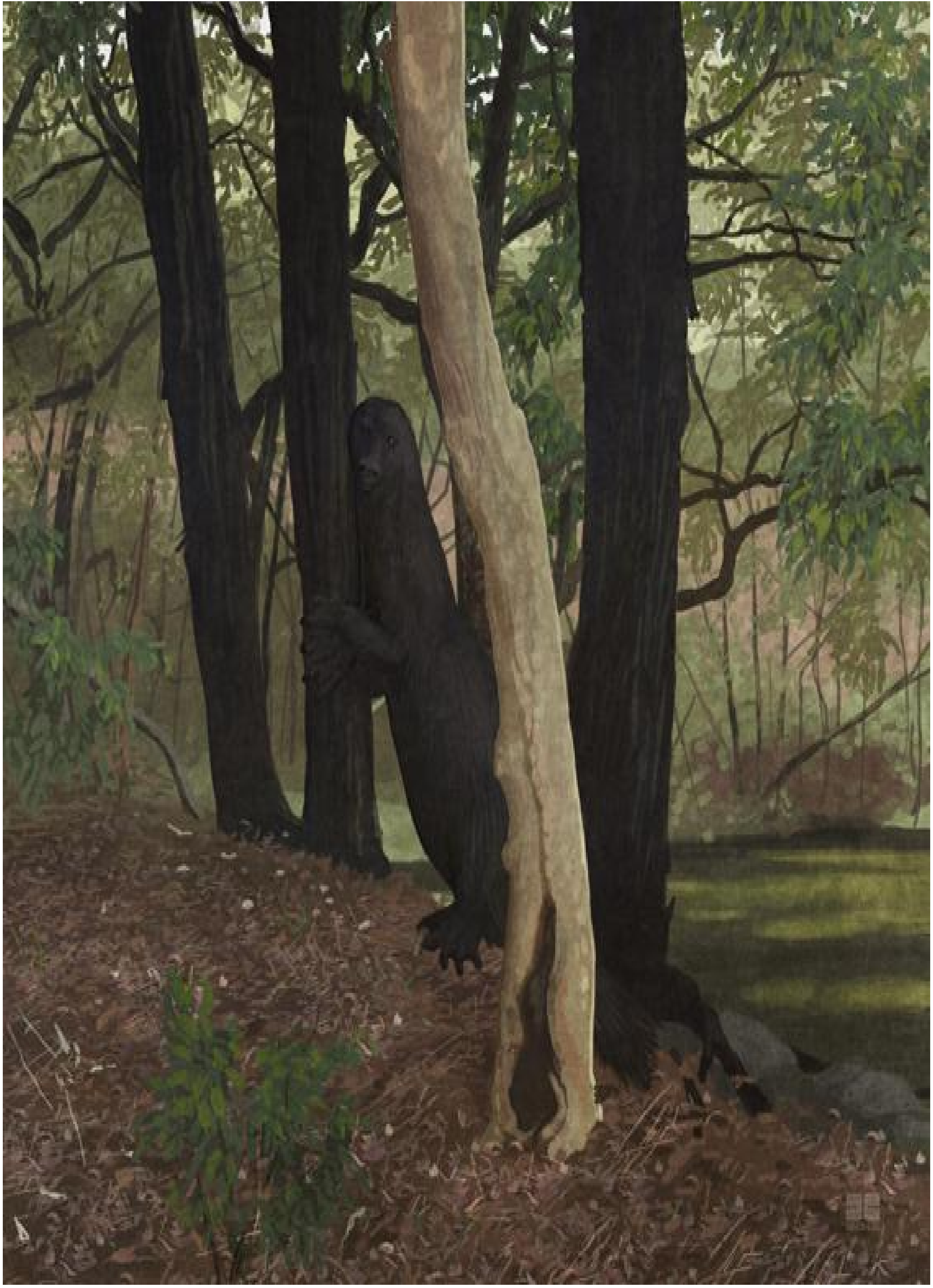
Bunyip

Australian water monster of diverse appearance



Location: across much of Australia, including Tasmania
Time: known to Europeans since about 1812 but supposedly known since time immemorial to Aborigines **The vague yet terrifying Bunyip** Australia is (supposedly) home to several fascinating mystery beasts, and among the most famous is the Bunyip, an amorphous water monster reported far and wide across the country. One of the earliest published references to the Bunyip (a pamphlet published in 1812 by James Ives) - in this particular case the name was spelt Bahnuip - refers to it as a black, seal-like creature that has a terrifying voice. Accounts from later in the 1800s likened the creature to a dog-like amphibious animal or, somewhat confusingly, described it as a calf-sized, shaggy-haired or maned quadruped, sometimes seen on land but otherwise amphibious (Healy & Cropper 1994).

Indeed, the concept of the 'Bunyip' soon became so vague and amorphous that nobody today really has a clear idea of what a Bunyip is meant to look like. Several intriguing eyewitness accounts (some from as recently as the 1940s) refer to furry, seal-like amphibious creatures vaguely corresponding to the creature described by Ives. An 1821 account provides the beast with a thick, metre-long neck and dark, hanging flaps (usually imagined to be shaggy ears) on its head while an 1872 description refers to a long-haired, glossy-coated, black 'water dog' that had prominent ears. Long-necked water beasts were also reported and referred to as Bunyips on occasion, and loud booming calls and bellows have also been attributed to it.

There are even a few pieces of Aboriginal art that depict Bunyips. An especially famous one depicted in several books (it was created in 1848 by an artist named Kurruk) shows a fat-bodied, small-headed quadruped that has slender legs and small ears and looks like a hippo-shaped mammal of some sort. While it's extremely interesting, it certainly doesn't look anything like the seal-like animal or 'water dog' type creature referred to above, though it might be taken as a representation of the more robust 'calf-sized' animal mentioned in some accounts and stories.

What, if anything, is a Bunyip?

For whatever reason, there does seem to be a core of reasonably good, anatomically consistent accounts of the Bunyip, all referring to a dark-furred, dog-headed 'seal-dog' (to use the term favoured by Tony Healy and Paul Cropper in their classic 1994 book on Australian cryptids). Could these all be descriptions of out-of-place seals or sea lions, or large platypuses, as some zoologists have proposed? Elsewhere in the world, seals are known to have travelled up-river for 1000s of kilometres (indeed, there are land-locked, lake-dwelling seals in Asia). And we can say with confidence that at least some Bunyip accounts are descriptions of known pinniped species: a 'Bunyip' shot dead in Victoria in 1848 was very clearly a leopard seal *Hydrurga leptonyx*. However, the shaggy fur, dangling ears and dark pelt described in some Bunyip accounts don't much recall any known seal, or indeed any known animal.

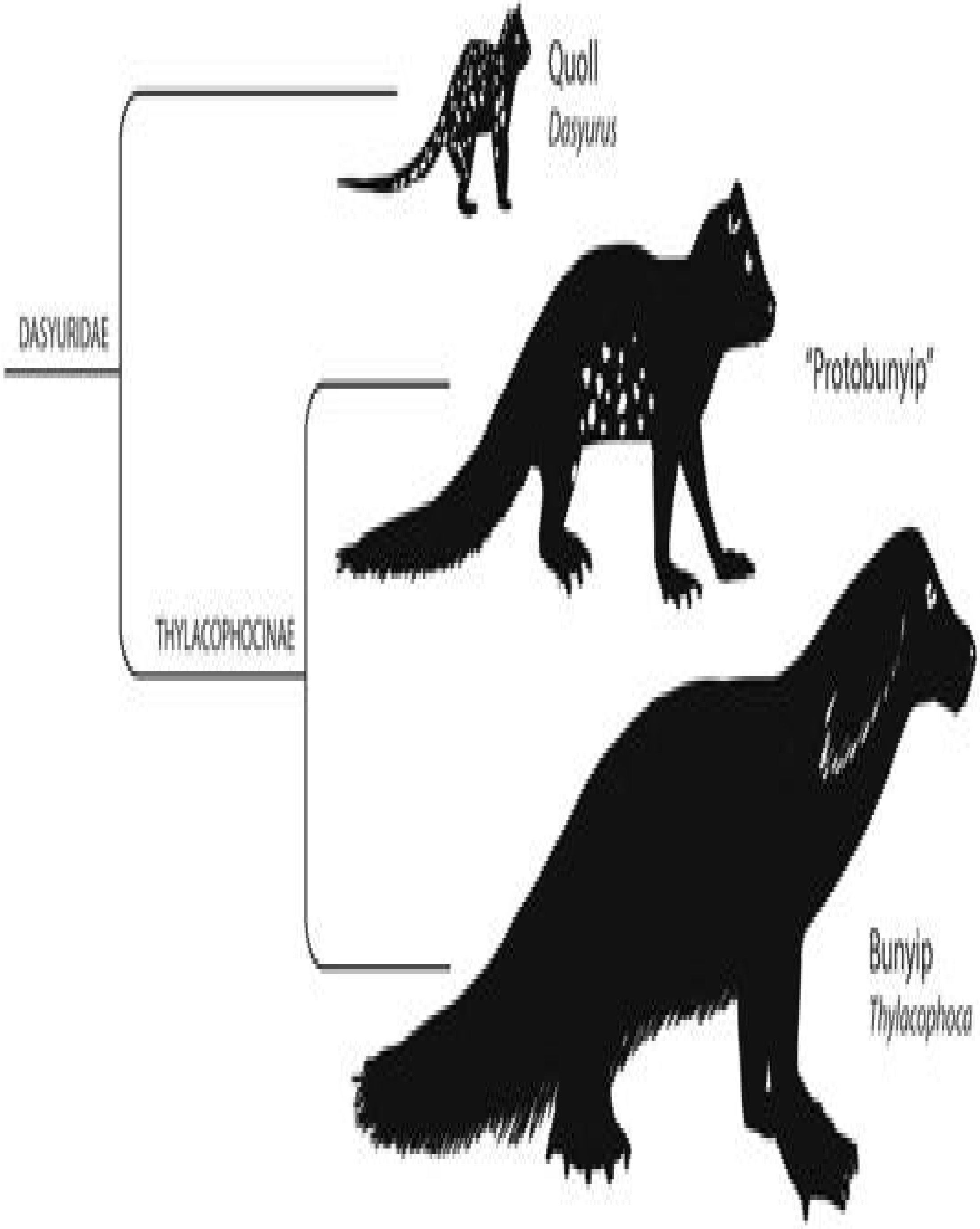
Of course, the possibility exists that all of the accounts are hoaxes, perhaps simply copied from the earlier ones, or that people were seeing known animals draped with water-plants. Other suggested explanations for Bunyip sightings include sightings of big fish, crocodiles and even of the Musk duck (*Biziura lobata*), a big weird duck that has a huge dewlap hanging from its lower jaw.

Bunyip dreams… a speculative exercise Assuming that those 'seal-dog' accounts describe a real animal, we find it irresistible to consider the possibility that this creature might be an aquatic, superficially seal-like marsupial - though note that it is *not* a close relative of another aquatic cryptid from Australasia, the Waitoreke. Given that the Australian marsupial radiation lacks any amphibious or aquatic member, it's always been tempting to wonder if the Bunyip could represent a uniquely aquatic marsupial. If we run with this idea, how far can we go?

Marsupials give birth to tiny, under-developed babies that they retain in a pouch. On its journey from the mother's vulva to the pouch, the baby has to clamber through its mother's fur, and to do this it needs strong, super-developed, grasping forelimbs. *Maybe* - some experts have proposed - *maybe* this is a fundamental constraint on the evolution of marsupials, preventing them from developing specialised forelimbs of the sort needed for swimming or flying (Lillegraven 1975).

In view of this, we suggest two possible solutions. One is that the Bunyip was indeed stuck with prehensile, grasping hands but that it evolved sculling forelimbs via a radically novel evolutionary pathway: its hands still possess the grasping anatomy required for the embryo, but unique epidermal or cartilaginous flanges grow from the arms while the animal is still in the pouch, eventually forming flipper-like blades. For this to work, mother Bunyips must have a water-tight pouch, sealed by a sphincter. Such an idea is not outlandish, since such a structure is already present in a South American marsupial, the Yapok or Water opossum *Chironectes minimus*.

The second solution is to assume that the Bunyip simply doesn't possess a pattern of ontogeny that involves pouches and babies that need to crawl anywhere with their hands: in other words, we imagine that the Bunyip is a pouchless marsupial. And that isn't an unusual or elaborate speculation, because numerous modern marsupial species are pouchless. Of all marsupials, the lineage that perhaps looks most likely to evolve a 'water-dog'-style species is Dasyuromorpha, the group that includes quolls, the so-called marsupial mice, the Tasmanian devil *Sarcophilus harrisii* and the (almost certainly extinct) Thylacine *Thylacinus cynocephalus*. These are sharp-toothed, predatory marsupials, potentially with the capacity to evolve into large, dog-like forms like thylacines as well as sturdy, robust-toothed scavengers like the Tasmanian devils. This is the ideal group to give rise to amphibious, otter-like predators and hence to fully aquatic, flippered Bunyips. And, while we generally think of marsupials as pouched, marsupial mice and some close relatives within the dasyuromorph group Dasyuridae have reduced or virtually absent pouches. We might have to think of mother Bunyips giving birth in secluded dens on land, but the idea that the whole pouch-related constraint has been lost in the mists of Bunyip evolution is appealing.


Quoll
Dasyurus
DASYURIDAE
"Protobunyip"
THYLACOPHOCINAE
Bunyip
Thylacophoca

From quoll-like dasyuromorph ancestors, a clade of big-bodied, amphibious predators - the thylacophocines - evolved. Their fossil record is somewhat scant.

We imagine the Bunyip *Thylacophoca hirsuticus* to be a fish- and crustacean eating, pouchless dasyurid marsupial, able to rest and move on land but mostly moving constantly through connected waterways where possible (and occasionally becoming seasonally trapped in large lakes). It does not occur in habitats already frequented by crocodiles. When on land, its dark, shaggy form and ability to stand upright enable it to mimic trees.

Large, highly mobile floppy ears are used as visual signals - Bunyips have acute eyesight and do not communicate via sound or scent - but these are folded flat against the head and neck when the animal is submerged. The comparatively long, trailing pelt of the Bunyip is oily and ordinarily traps a layer of air as do the also long-haired pelts of some other swimming mammals like desmans and some rodents. Forelimbs have provided the main propulsive force during swimming throughout Bunyip evolution and have become substantially enlarged while the hindlimbs and tail, though still present, are reduced and typically hidden from view within the shaggy pelage.

Healy, T. & Cropper, P. 1994. *Out of the Shadows: Mystery Animals of Australia*. Ironbark (Chippendale, Australia).

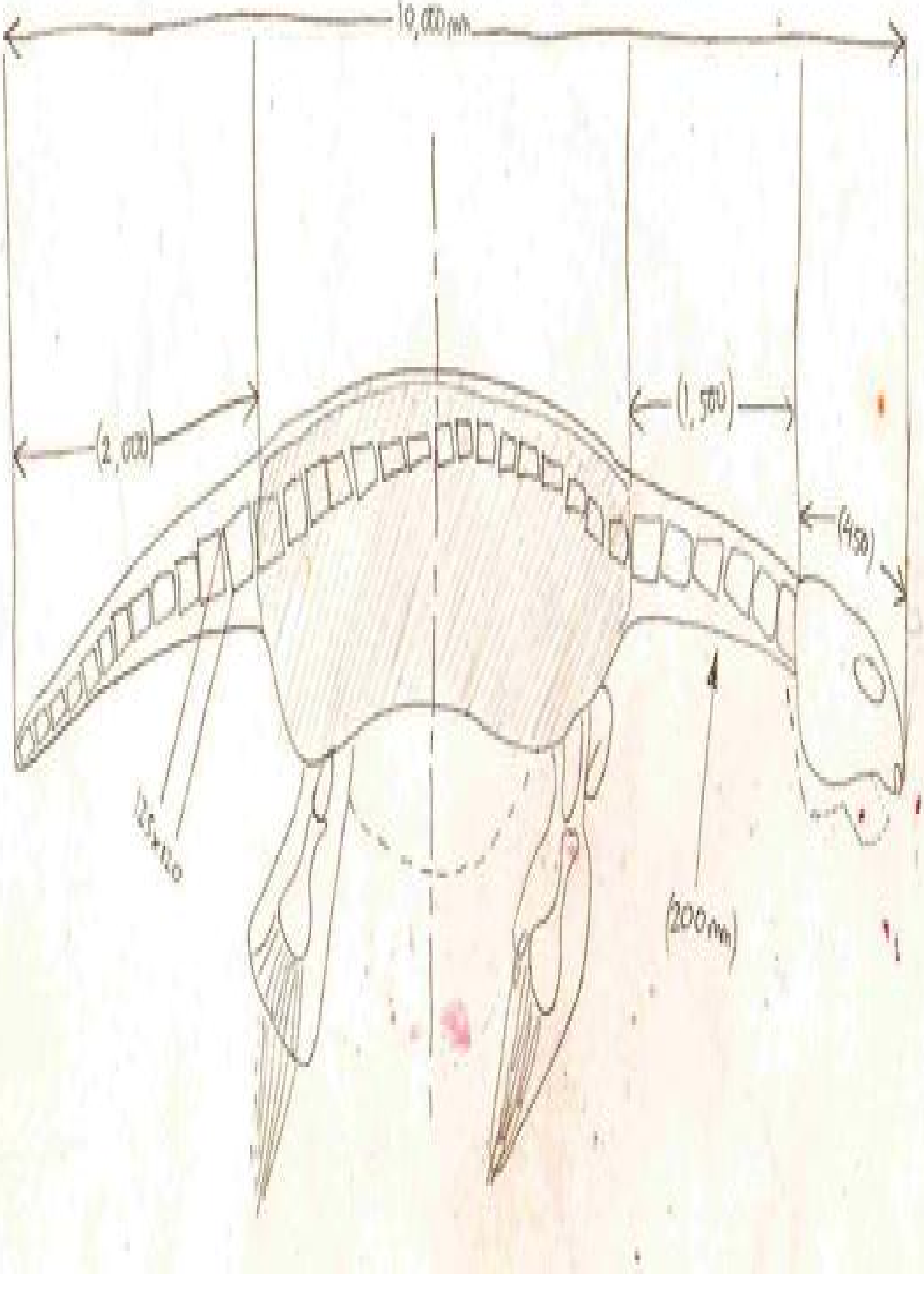
Lillegraven, J. A. 1975. Biological considerations of the marsupial-placental dichotomy. *Evolution* 29, 707-722.

Zuiyo Maru Creature

A famous 'mystery carcass' creature that isn't really a mystery

Location: off the Pacific coast of New Zealand
Time: 1977

Zuiyo Maru: what the crew saw On 25th April 1977, a Japanese fishing vessel called the Zuiyo Maru was working off the Pacific coast of New Zealand when it snagged the foul-smelling carcass of a large and bizarre sea creature. The carcass - about 10m long and hauled up from a depth of about 300m - was so peculiar in appearance that the crew took photographs before the captain decided to throw it back overboard (sketches were also made, but only after the carcass had been discarded). Its four large paddles, long neck and small head reminded them of a plesiosaur. Public and media interest in the carcass was substantial and a special symposium was held in September 1977 by the Tokyo University of Fisheries. Could it be what the crew suspected: the rotting remains of a creature thought long-extinct by scientists?


10,000 μm
(2,000)
(1,500)
(450)
125×110
(200 nm)

The Zuiyo Maru carcass as illustrated (with measurements) by a member of the crew. As intriguing as it appears, this drawing was not, unfortunately, drawn directly from the carcass.

It's 'case closed' on the Zuiyo Maru Creature Sea monster history is full of accounts of weird, long-necked, vaguely lizard-shaped carcasses, sometimes kitted out with extra limbs and a furry coat. They prove on examination to be heavily decomposed Basking sharks. Given what we know about the decomposition pattern of sharks, it always seemed that the Zuiyo Maru carcass was merely another example of this sort of thing. Indeed, such an identification was confirmed by the existence of horny fibres termed ceratotrichia collected from the pectoral fins, found to be almost identical in chemical composition to those of basking sharks (Kimura *et al*. 1978).

In a series of collected papers that resulted from the 1977 Tokyo University of Fisheries meeting, most contributions concluded on the basis of comparative anatomy or tissue analysis that the carcass was indeed that of a large shark. However, one article argued that the carcass differed from known shark species in its fin configuration and thus perhaps represented a new shark species (Yasuda & Taki 1978). Another - titled 'Comparison of the unidentified animal with fossil animals' (Obata & Tomoda 1978) - concluded by noting that "General opinion favours identification as a shark", but went on to say that "a biologist who is inclined to the 'shark concept' told us that he had an impression, when he recently had an opportunity to see a large specimen of the basking shark, that the animal in question would not be basking shark" [sic] (Obata & Tomoda 1978, p. 54).

It's case closed on the Zuiyo Maru carcass - it really was a big shark (almost certainly a Basking shark), and the few suggestions to the contrary are inaccurate or too arm-wavy to be taken seriously.

Reconstructing the carcass beast If, purely for the purposes of entertaining speculation, we side with the few creationists and cryptozoologists who pretend that the carcass actually represented a new, non-sharky large vertebrate animal, what might it have looked like when alive? For starters, if we don't interpret the Zuiyo Maru Creature as a rotting carcass, it must have been an oddly lumpy, tattered looking animal with a zombie-esque look - maybe it's a specialised benthic animal that mimics lumpy, muddy terrain on the seafloor, or maybe it deliberately mimics a rotting carcass in order to attract prey.

Long spines projecting off the front of the snout and underside of the neck (strangely, they project forwards, not backwards), and also off the trailing edges of the pectoral fins, could be defensive or sensory in function. Massive, diamond-shaped flippers suggest slow, flapping underwater flight while a robust, V-shaped arrangement of pectoral bones indicate that strong bracing of the chest region was needed. Another radically odd detail is that the ventral tip of the 'V-shaped' structure gives rise to a long, barbel-like structure on the animal's midline. This would have trailed beneath the body like a tentacle or wattle during swimming. Maybe it was a prehensile organ used in finding food or caressing partners during mating, maybe it exudes pheromones, or maybe it serves a role in visual display and evolved under sexual selection pressure.

The flexible neck was perhaps used to snap the head upwards or sideways, a rapid opening of the mouth creating suction and the engulfment of prey. Some observers (well, creationist ones: Goertzen 2001) argue that paired dorsal fins are present in the shoulder region. Surely, the Zuiyo Maru Creature - which would like to see named *Zuiyomaruzoon necrosimulacrum* - is one of the most bizarre and grotesque of the world's tetrapods...

We're not serious, of course, but every now and again a few cryptozoologists join creationists in rejecting the shark identification to argue that the creature was not a shark at all, but a modern-day marine reptile like a plesiosaur. Cryptozoologist Loren Coleman has joined sceptical zoologists in noting that this point of view makes cryptozoology look more naive and bizarre than it already does, since it flies in the face of a reasonable amount of compelling evidence.

Goertzen, J. 2001. New Zuiyo Maru cryptid observations: strong indications it was a marine tetrapod. *Creation Research Society Quarterly Journal* 38, 19-29.

Kimura, S., Fujii, K., Sato, H., Seta, S. & Kubota, M. 1978. The morphology and chemical composition of horny fiber from an unidentified creature captured off the coast of New Zealand. In Sasaki, T., Yasuda, F., Nasu, K. & Taki, Y. (eds) *Collected Papers on the carcass of an unidentified animal trawled off New Zealand by the Zuiyo-maru*. La Société franco-japonaise d'océanographie (Tokyo), pp. 67-74.

Obata, I. & Tomoda, Y. 1978. Comparison of the unidentified animal with fossil animals. In Sasaki, T., Yasuda, F., Nasu, K. & Taki, Y. (eds) *Collected Papers on the carcass of an unidentified animal trawled off New Zealand by the Zuiyo-maru*. La Société franco-japonaise d'océanographie (Tokyo), pp. 45-54.

Yasuda, F. & Taki, Y. 1978. Comparison of the unidentified animal with fishes. In Sasaki, T., Yasuda, F., Nasu, K. & Taki, Y. (eds) *Collected Papers on the carcass of an unidentified animal trawled off New Zealand by the Zuiyo-maru*. La Société franco-japonaise d'océanographie (Tokyo), pp. 61-62.

Mbielu-Mbielu-Mbielu

Congolese water monster with 'planks' on its back

Location: Likoula River region, Republic of Congo
Time: seemingly known from local lore collected in 1980

"The animal with planks growing out of its back"

If the interpretations of certain cryptozoologists are to be believed, the Congo region of Africa is a veritable hotbed of cryptid activity, and also a hotspot for the diversity of gigantic continental tetrapods. As if the supposedly sauropod-like Mokele-Mbembe and supposedly ceratopsian-like Emela-Ntouka are not incredible enough, the region has also been said to be home to yet another large, swamp-dwelling, reptile-like animal: the bizarre Mbielu-Mbielu-Mbielu.

Like the Emela-Ntouka and some other Congolese cryptids, we predominantly know of Mbielu-Mbielu-Mbielu thanks to Roy Mackal's book *A Living Dinosaur? In Search of the Mokele-Mbembe* ; therein, Mackal described how he learnt of "the animal with planks growing out of its back", a large, amphibious creature, seen in the water with only its back protruding, and with green algae growing on its back and plates (Mackal 1987). Mackal was unable to find any other information on the creature. In fact, it doesn't seem that he was able to track down any witnesses at all: he only learnt of the idea that the creature might exist after an informant noted that a stegosaur illustration in a book resembled Mbielu-Mbielu-Mbielu.

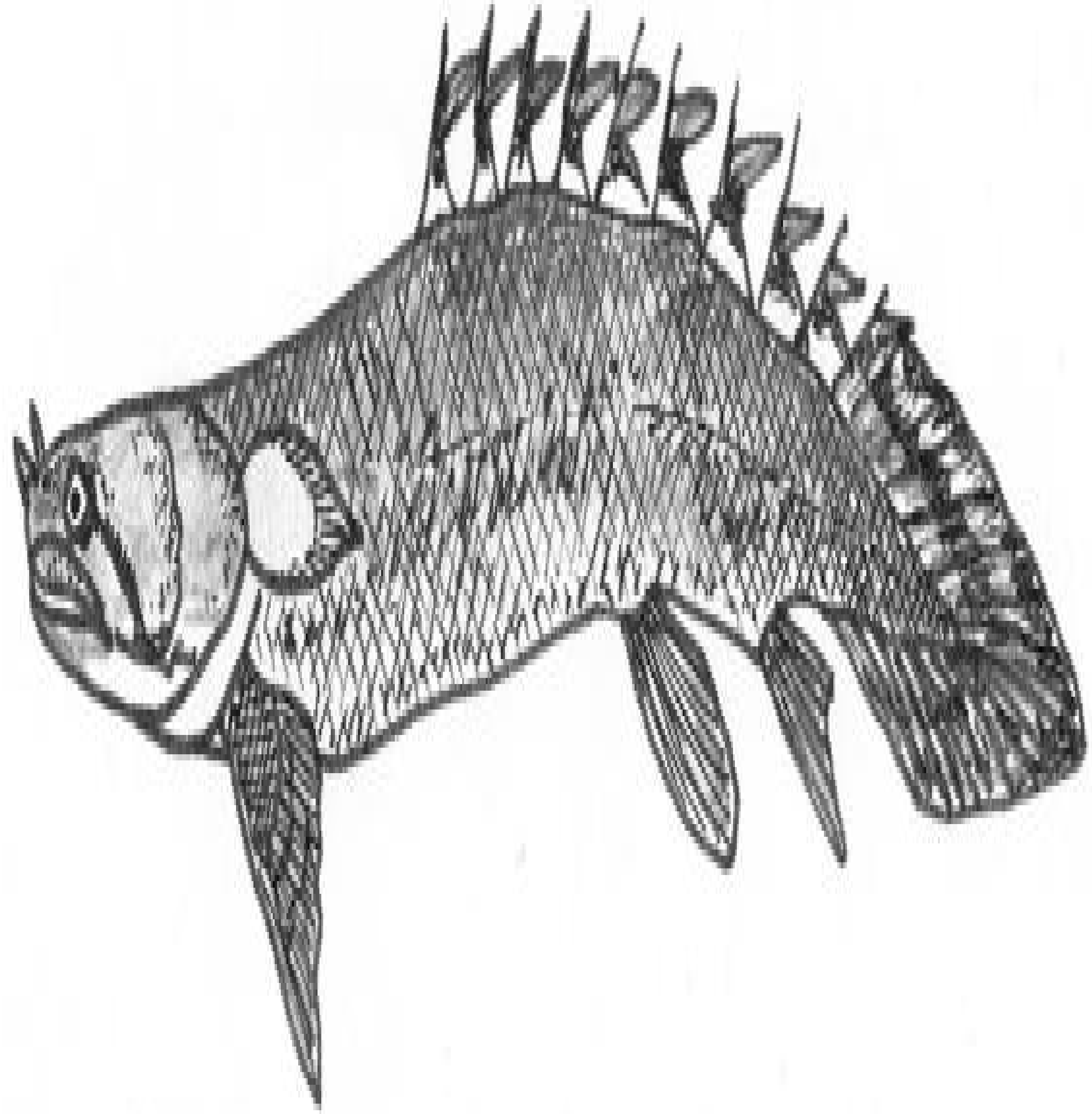
All discussions of the Mbielu-Mbielu-Mbielu published since 1987 have been based on what Mackal said. And because Mackal was only able to think that the creature might be a modern-day aquatic stegosaur, this is all that anyone has ever said it might be (though the suggestion that it might be the same as the Nguma-Monene has been mentioned). One would think that cryptozoologists like Mackal are unable to do anything other than interpret tales and anecdotes literally, to not consider the possibility that other animals or phenomena might represent alternative identifications.

Come on, cryptozoologists, surely you can do better than that?

In reality, an aquatic creature said to have 'planks' growing out of its back could be several things. The scutes on the upper surfaces of crocodiles can be unusually prominent in freak individuals, and the possibility that such a creature might be a giant turtle with a damaged shell (which, after all, can live for decades and decades) is also worth considering. There also cases from elsewhere in the world (North America) where people have mistaken large, gnarly tree branches - moving with the current and possessing big, regularly spaced woody nodes - as the backs of great water creatures. Our main point here is that we do not believe that cryptozoologists are doing a good job when they hear of "planks growing out of the back" and immediately respond with "Aha - - *STEGOSAURUS*!!", surely the least likely possibility.

Our viewpoint echoes that of other sceptical cryptozoological investigators. Charles Paxton and colleagues, for example have essentially encouraged the view that, when considering aquatic monster sightings, we need to consider as many options as possible (Paxton & Holland 2005, Paxton *et al*. 2005): jumping immediately onto a single dodgy interpretation, as Mackal and some other cryptozoologists have, is unlikely to prove useful.

The speculative part: a bigger, better bichir We are tired, bored and frustrated with the idea that the vaguely reptilian monsters of the cryptozoological literature are consistently interpreted as survivors from the distant Mesozoic. These ideas always rely on an incorrect, anachronistic view of the creatures concerned, are inconsistent with our knowledge of evolution and the fossil record, and are - we argue - lazy and uninventive. Confronted with the Mbielu-Mbielu-Mbielu, we were immediately reminded of the bichirs (the name is pronounced 'bikers'), an interesting group of fish not previously mentioned in connection with this cryptid (though we do have to note that a species of bichir was named *Polypterus mokelembembe* in 2006).



A modern bichir: the Congolese species Polypterus weeksi. These long-bodied fish possess a series of flag-like dorsal fins as well as muscular pectoral fins.

Bichirs, widely distributed in tropical Africa and reaching 1m in total length, possess numerous paired dorsal finlets that form two rows along the back and tail. In fact, the name 'dinosaur eel' is even used for these fish for this very reason (they are also called reedfish or ropefish). A large bichir swimming near the water surface could, we suggest, explain Mbielu-Mbielu-Mbielu accounts. This is hugely speculative, of course, and relies in part on the idea that people have misjudged the size, or seen bichirs much larger than the recorded maximum... the point is that it is far less speculative, and certainly far less absurd, than the idea of an aquatic, modern-day *Stegosaurus*. Please note that we are *not* saying that that the Mbielu-Mbielu-Mbielu is (a) real and (b) proof positive for the existence of a giant, undiscovered bichir. Rather, we are saying that cryptozoologists have done an extraordinarily bad job of coming up with alternative explanations for this alleged creature.

The bichir that we imagine as being behind Mbielu-Mbielu-Mbielu reports is a new, gigantic species - *Mbielia mackali* - that has taken large size, air-breathing habits and an elaboration of the spine-bearing dorsal finlets to an extreme. The mobile finlets, used throughout the group in social signalling, have become over-developed visual signals in this animal, their gigantic, plate-like form creating a striking vision when these are the only parts of the animal seen projecting from the water.

The unusually muscular pectoral fins of bichirs are reminiscent of the lobe-like fins of lungfish and fossil tetrapod ancestors. *Mbielia* belongs to a bichir lineage that has independently evolved its own, lobefin-like pectoral fins that allow movement on land; it also possesses the most elaborate lungs seen in the group and is fully able to breathe on land. Due to their size, large adults can do little more than haul out of the water and rest on sloping banks, but juveniles are able to disperse some distance away from the water bodies in which they were hatched. Gigantic size in bichirs is not wholly novel, since we know from Cretaceous fossils that extinct members of the group reached 3m in total length (Grandstaff *et al*. 2012) and hence were about similar in size and bulk to *Mbielia*.

Grandstaff, B. S., Smith, J. B., Lamanna, M. C., Lacovara, K. J. & Abdel-Ghani, M. S. 2012. *Bawitius*, gen. nov., a giant polypterid (Osteichthyes, Actinopterygii) from the Upper Cretaceous Bahariya Formation of Egypt. *Journal of Vertebrate Paleontology* 32, 17-26.

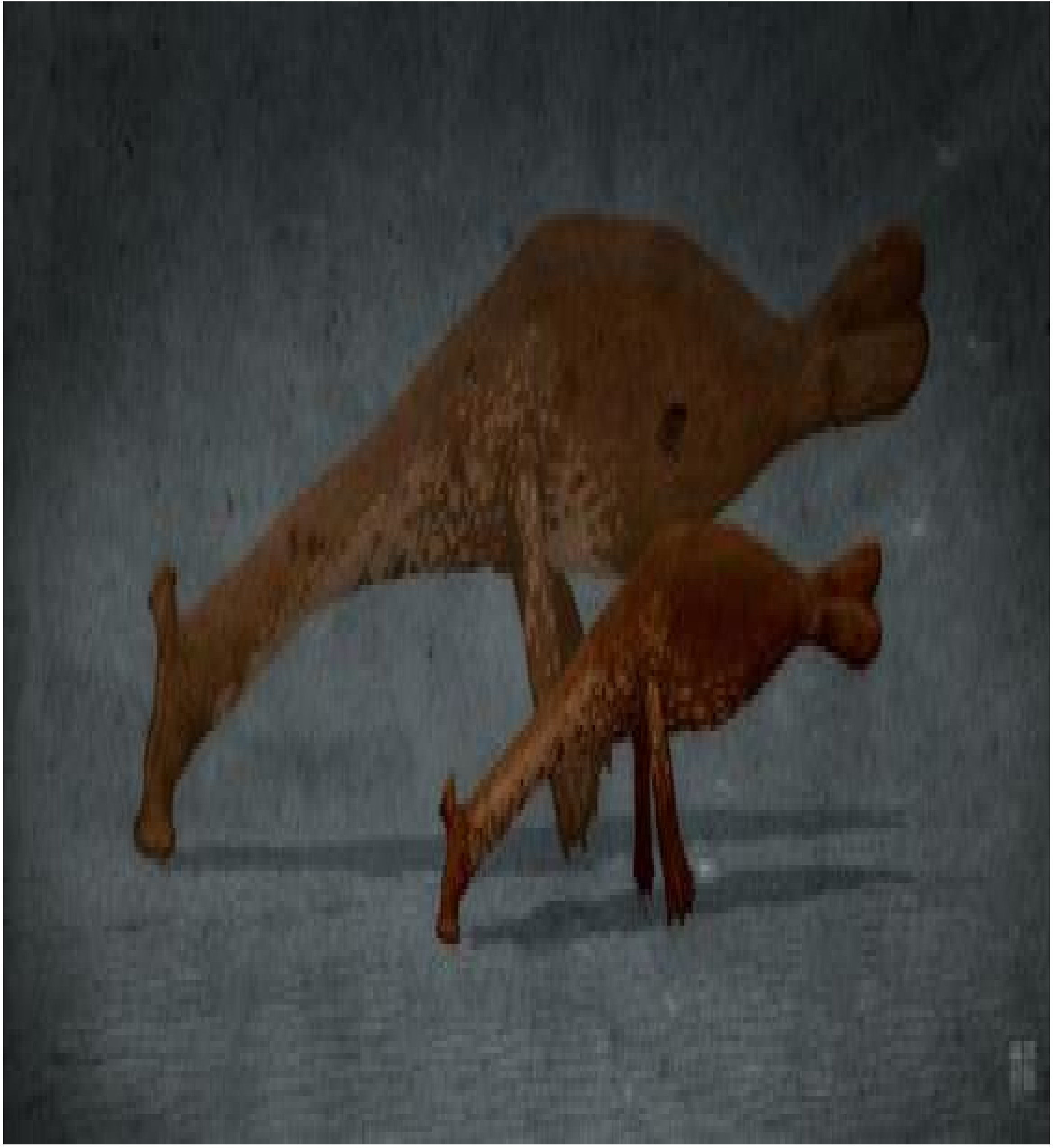
Mackal, R. P. 1987. *A Living Dinosaur? In Search of the Mokele-Mbembe*. E. J. Brill, Leiden.

Paxton, C. G. M. & Holland, R. 2005. Was Steenstrup right? A new interpretation of the 16th century sea monk of the Øresund. *Steenstrupia* 28, 39-47.

Paxton, C. G. M., Knatterud, E. & Hedley, S. L. 2004. Cetaceans, sex and sea serpents: an analysis of the Egede accounts of a "most dreadful monster" seen off the coast of Greenland in 1734. *Archives of Natural History* 32, 1-9.

Long-necked Seal

Pelagic, plesiosaur-pretending preposterous pinniped



Location: seas and coastlines worldwide, but with some of the best accounts coming from the shores of the UK
Time: mostly reported since 1846, with the best accounts dating to 1913 and 1919

Bernard's surreal seal A popular tradition within cryptozoology has been the classification and categorisation of mystery animal reports. People collect sightings, group together the ones that seemingly have features in common, give names (sometime quirky, sometimes misleading names) to the creatures they think they've identified, and then set about allocating these apparently identified creatures to a specific group while also making claims about its evolution and biology. If we imagine that a robust, well-documented and detailed set of mystery animal reports existed in the first place, the concept that accounts might be sortable into sets would be reasonable. Alas, the initial problem with this approach is that the mystery animal reports that people typically analyse are the very opposite of robust, well-documented and detailed. They are, all too frequently, vague, flimsy and untrustworthy, so much so that the entire endeavour cannot be considered trustworthy or repeatable.

One of the best examples of this phenomenon comes from the world of sea monster research. Bernard Heuvelmans - the pioneering cryptozoologist mentioned on so many occasions in this book - proposed that the sea monster accounts of the world could be divided into nine sets, each of which represented a distinct, undiscovered species with its own specific morphological, behavioural and ecological characteristics (Heuvelmans 1968). While his method and logic appear sound, examination of the reports that form the basis for each of his sea monster 'species' shows that they often share only the vaguest of similarities, possess features that make them sound far more like the members of other 'species' than Heuvelmans admitted, and were sometimes slotted into a particular 'species' for erroneous reasons (because, for example, they came from a geographical region that Heuvelmans already regarded as typical for a given species).

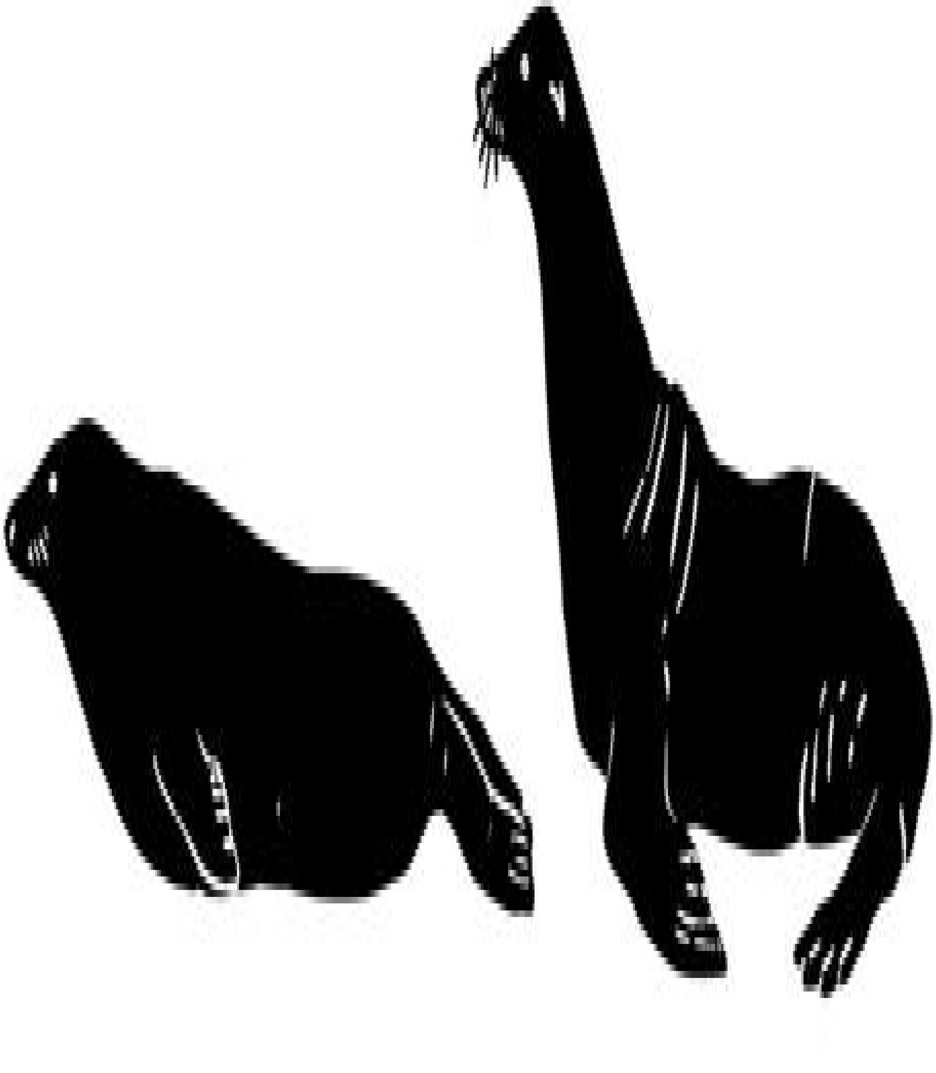
Furthermore, especially detailed sea monster accounts frequently don't fit into his scheme at all, showing that the more information you have, the less reliable his classification scheme becomes! For these reasons, the entire 9-fold sea serpent classification advocated by Heuvelmans (1968) - and followed and tweaked over the years by other cryptozoologists - cannot be considered reliable or repeatable (Magin 1996).

Several accounts led Heuvelmans to advocate the existence of a gigantic pinniped, a member of the same group of carnivorous mammals that includes seals, sea lions and walruses. Heuvelmans dubbed this beast (typically 7-19m long but sometimes 30m long or more) the Long-necked sea-serpent and even gave it a scientific name: *Megalotaria longicollis*. It was described as having a proportionally small, dog-like or even camel-like head, tiny eyes, paired tubes or horns on the top of its head, a highly flexible, long, cylindrical neck, a massive, smooth-skinned, dark brown body, a dorsal ridge of some sort (perhaps accentuated by hair), and four large flippers (Heuvelmans 1968). Its peculiar appearance compared to other pinnipeds has led some researchers to dub it the 'surreal seal' (Cornes 2001). Several cryptozoological authors later expanded and elaborated on the supposed existence of *Megalotaria* (Costello 1974, Coleman & Huyghe 2003) and it has even been noted that a creature described as a 'long-necked seal' was reported in the literature by Parsons (1751) (Woodley *et al*. 2008).

Show me the evidence The notion of the giant, long-necked pinniped proved popular in the cryptozoological literature, and the idea that the creature might be real has never really gone away, even though truly long-necked pinnipeds remain unknown from the fossil record, and even though the incredible size often described for the creature makes its reality unlikely. Indeed, the idea that such an enormous, unusual pinniped has remained undiscovered means that it must be incredibly secretive: non-vocal (in contrast to the majority of other pinnipeds), choosing to haul out only in places where people never go (err, where?), or perhaps being novel in being wholly aquatic and never visiting land. That's a fine idea, but the problem is that some of the best, most detailed sightings described encounters with the creature on land. What about the 'long-necked seal' described by Parsons (1751)? As noted by Woodley *et al*. (2008), it is most probably a confused description of a sea lion - a strange, unfamiliar and long-necked animal to someone only familiar with phocids.

Theoretical objections aside, the main problem with the idea of the Long-necked seal is that the evidence is simply not good enough to suggest that we should really take it seriously. The eyewitness accounts - the only evidence we have - are vague and mangled.

A new look at giant, long-necked speculative pinnipeds But exactly what sort of pinniped would the Long-necked seal be, were it real? Heuvelmans actually didn't think the Long-necked seal was a seal at all (seals belong to the pinniped family Phocidae). Instead, he hinted at an affinity with otariids, the group that includes sea lions and fur seals. He thought this because there's at least one eyewitness report where a large, lolloping, long-necked animal seen on a beach was described as moving quickly on upright forelimbs and with its hindlimbs pointed forwards. Phocids can't do this: their hindlimbs project backwards and they move across the land by wiggling or throwing their bodies forward with their proportionally small forelimbs, only otariids can.



True seals (or phocids) appear short-necked, torpedo-shaped and use a humping, caterpillar-like motion of the body to move on land. Sea lions and fur seals (or otariids) appear long-necked and their large, highly mobile limbs allow them to move rapidly and with great agility when on land.

The giant size and cryptic nature of *Megalotaria* mean that it must be substantially aquatic, mostly likely living a live divorced from land. However, its enormous size and pelagic lifestyle are relatively new features that have only evolved in the last few million years. Consequently, the animal still retains skeletal features that allow the body to be supported on land, and smaller individuals (young ones of less than 7m in length) can still do this. Profound sexual dimorphism in *Megalotaria* explains the size discrepancy in sightings, with enormous bulls being twice the length of females.

Megalotaria fills a unique ecological niche for pinnipeds. It does not pursue fish, squid or other such prey at speed in open water. Rather, it is a benthic feeder on the abyssal plain, diving deep to search for sea cucumbers, sea stars and other prey, and apparently finding them by touch. Its paired breathing snorkels mean that it is usually concealed just beneath the surface when lounging between dives. In evolutionary terms, *Megalotaria* is a remarkable innovation among pinnipeds, absolutely unlike all other members of its group. If it survives the age of man, it should give rise to an entire dynasty of open-ocean, deep-diving, long-necked giant pinnipeds.

Coleman, L. & Huyghe, P. 2003. *The Field Guide to Lake Monsters, Sea Serpents, and Other Mystery Denizens of the Deep*. Tarcher/Penguin, New York.

Cornes, R. 2001. The case for the surreal seal. In Heinselman, C. (ed) *Dracontology Special Number 1: Being an Examination of Unknown Aquatic Animals*. Craig Heinselman (Francestown, New Hampshire), pp. 39-45.

Costello, P. 1974. *In Search of Lake Monsters*. Garnstone Press, London.

Heuvelmans, B. 1968. *In the Wake of the Sea-Serpents*. Hill and Wang, New York.

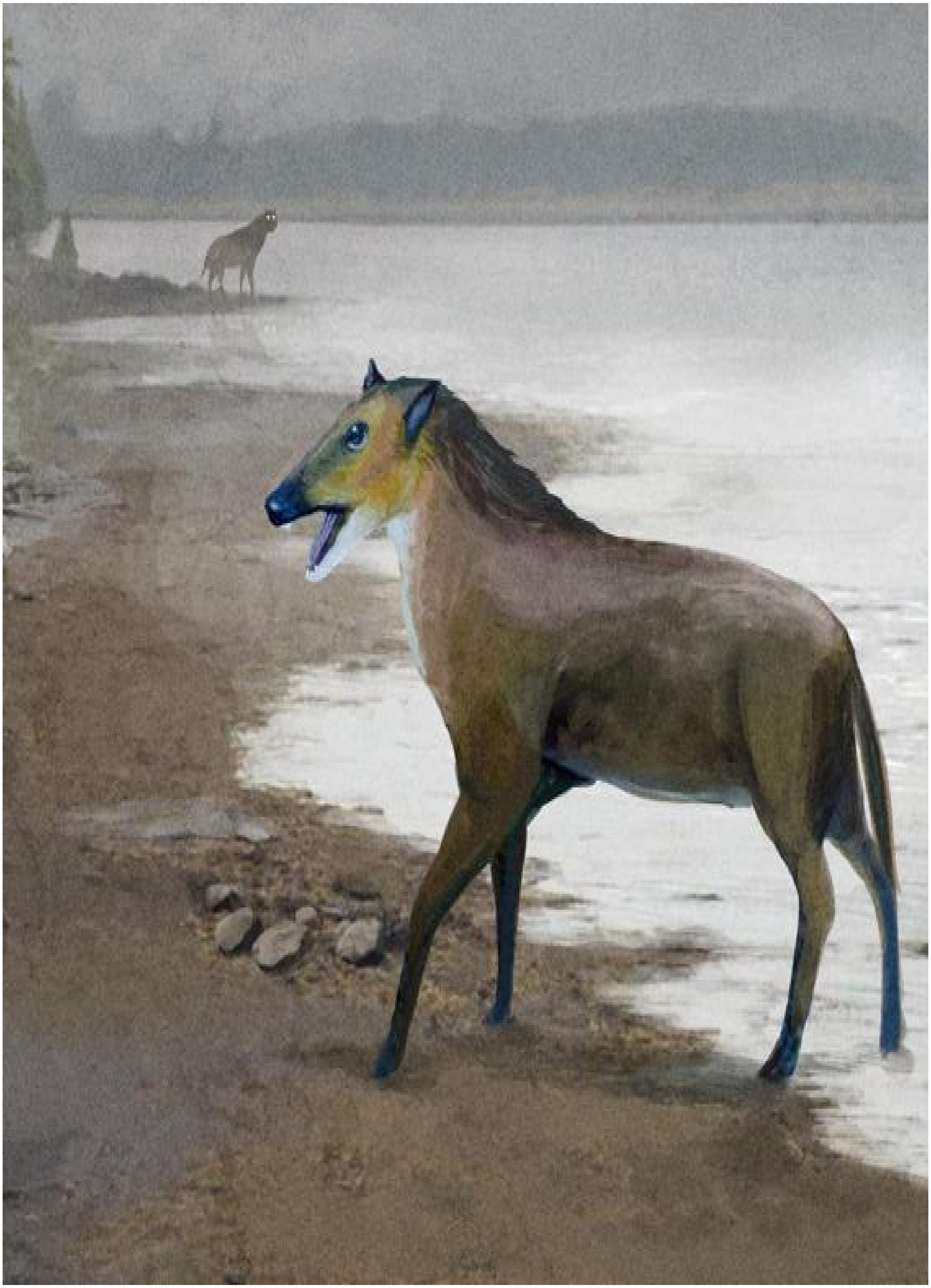
Magin, U. 1996. St George without a dragon: Bernard Heuvelmans and the sea serpent. In Moore, S. (ed) *Fortean Studies Volume 3*. John Brown Publishing (London), pp. 223-234.

Parsons, J. 1751. A dissertation upon the Class of the Phocae Marinae. *Philosophical Transactions* 47, 109-122.

Woodley, M. A., Naish, D. & Shanahan, H. P. 2008. How many extant pinniped species remain to be described? *Historical Biology* 20, 225-235.

Kelpie

Paradoxical hoofed carnivore of cold northern lakes



Location: known from the folklore of Great Britain (especially Scotland) and Scandinavia
Time: a creature of ancient folklore, though with sightings made right up to the present attributed to it by some cryptozoologists

Call of the Kelpie

Kelpie is an old Scottish name for a creature sometimes called the Water Horse, Kelpy or Water Kelpie. Actually there is little clear indication of what a Kelpie is meant to look like other than that it is horse-like, with the word itself supposedly being based on the Gaelic 'colpach', meaning 'colt'. Similar creatures are present in Scandinavian and Welsh folklore and several different names are used for them.

Some descriptions of Kelpies say that they are simply black, wild-looking horses, sometimes with especially large, bulging eyes, sometimes with dripping manes, and sometimes with sleek, seal-like skin, but they are also attributed shape-shifting abilities and, in some tales, are described as dangerous killers of people and even as carnivores. In the most frequently heard Kelpie tales, people who choose to climb on to the Kelpie's back find that they are unable to move or climb off; the Kelpie then rushes into a nearby deep lake or pool, drowning the person and consuming them deep beneath the water. Occasionally the term Kelpie has been associated with other water monsters, including the Loch Ness Monster, but we do not consider this true to the original meaning of the name.

Could Kelpies be real? No, stupid

We, like probably all modern researchers, are confident that Kelpies are mythical beasts combining assorted motifs like shape-shifting, magical events associated with water, the concept of the bottomless pool, and so on. Perhaps the mythical idea of a killer pseudo-horse is based on the age-old idea that horses and other creatures seen near water might sometimes be dangerous, and perhaps the idea of creatures like Kelpies was maintained by people who wished children to stay away from treacherous bodies of water. In fact, it makes brilliant sense that people would deliberately instill fear in children in an effort to make them stay away from dangerous places. It may be that many monster stories were perpetuated for this reason.

The name Kelpie is currently used for a domestic dog breed that originated in Australia, often thought (erroneously) to incorporate Dingo DNA. The dog was named after the Scottish water monster, specifically for the Kelpies mentioned in Robert Louis Stevenson's 1886 story *Kidnapped*.

Beware *Sarcomoschus*!

Can we interpret the Kelpie as a real animal? While there are no amphibious horses, and while it seems odd to imagine a horse-shaped quadruped as being willing or able to run into the water and become completely submerged, there are several hoofed mammal species (including water buffalo, the sitatunga antelope and various deer; all members of the even-toed hoofed mammal clade, or Artiodactyla) that routinely wallow and stand in water so frequently that they can almost be regarded as amphibious. More surprisingly, there are even artiodactyls - the best example is the African Water chevrotain *Hyemoschus aquaticus* - that become entirely submerged and will then walk along the bottom of the river or pool that they have waded into.

We cheekily propose that Kelpies are actually giant, especially robust amphibious relatives of chevrotains, adapted for cool northern climates and possessing thick, luxuriant manes and tails that make them look superficially horse-like from a distance. An oily, dense, velvety pelt insulates the Kelpie during its aquatic forays but has a sticky feel, and it is clearly this characteristic which has given rise to the idea that Kelpies are adhesive.

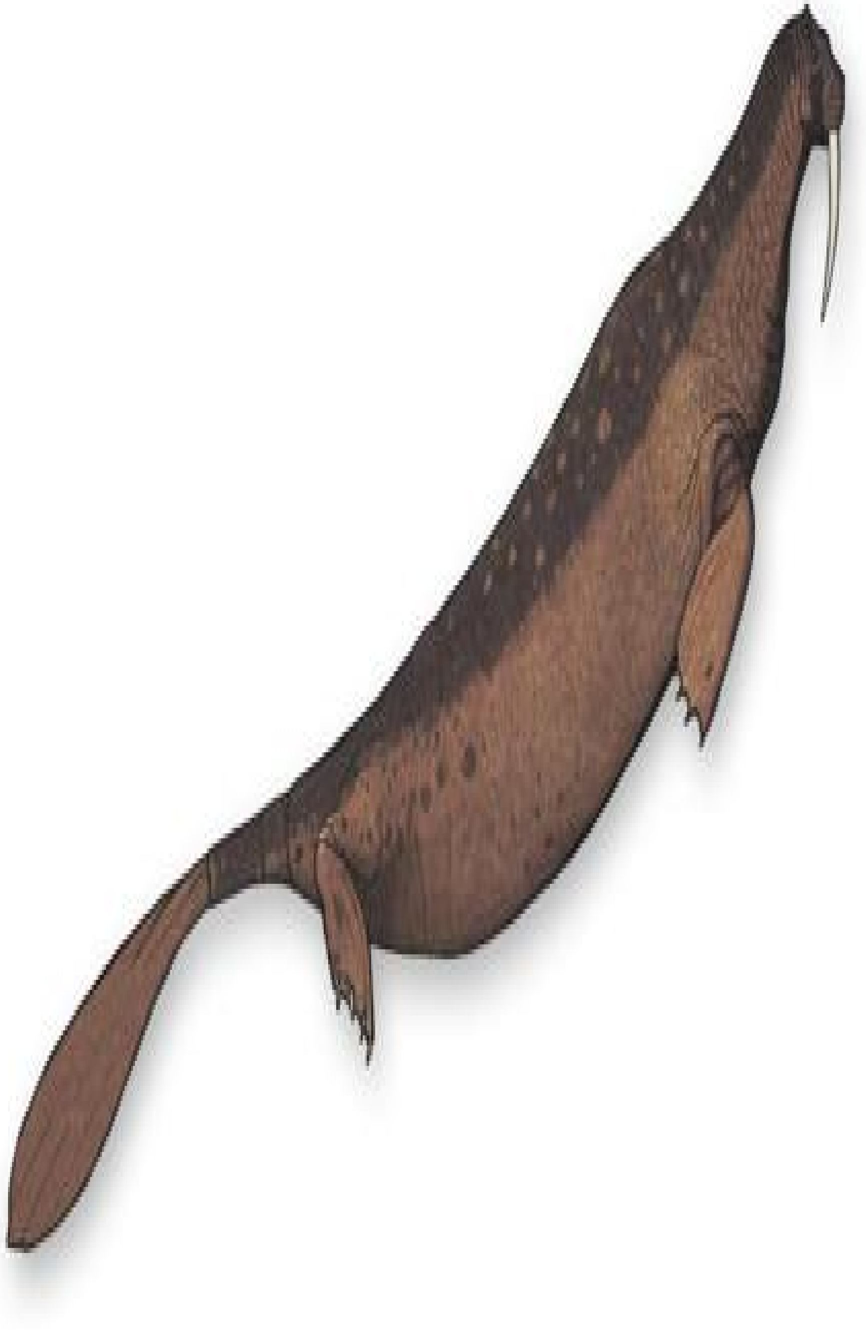
Identification of the Kelpie - we're calling it *Sarcomoschus borealis* - as a large, cool-adapted chevrotain-like artiodactyl could also explain the occasional carnivorous behaviour that has become the stuff of legend, since chevrotains and other similar artiodactyls are not pure herbivores: they frequently eat small animals including frogs, birds and insects. We imagine that a giant species retains concealed, fang-like teeth beneath flexible lips and that it can tear vertebrate prey asunder and consume them on occasion, its prey including such large animals as the odd human. Seen from a distance and not studied in detail, the Kelpie (a solitary creature that only meets up with others at breeding time) is similar enough to a horse or pony to be mistaken for one.

It even leaves horse-like tracks, since the cloven hooves typical of an artiodactyl have fused together to form a superficially horse-like hoof (a process which has genuinely occurred in the real world: there are various domestic pig breeds - the most famous is the Mulefoot - with syndactyl, hoof-like feet (Porter 1993). Syndactyl cattle have been bred as well). Close inspection of a Kelpie reveals a different head shape, a peculiar velvety pelt and dark, bulging eyes different from those of a horse but typical of chevrotains and other artiodactyls. Next time you approach horses grazing around a Scottish lake… beware, *Sarcomoschus* could be among them!

Porter, V. 1993. *Pigs: A Handbook to the Breeds of the World*. Helm (Mountfield, Easy Sussex).

Dingonek

Freshwater 'walrus' from tropical Africa



Time: early 1900s, though with tales stretching back some unknown period beforehand

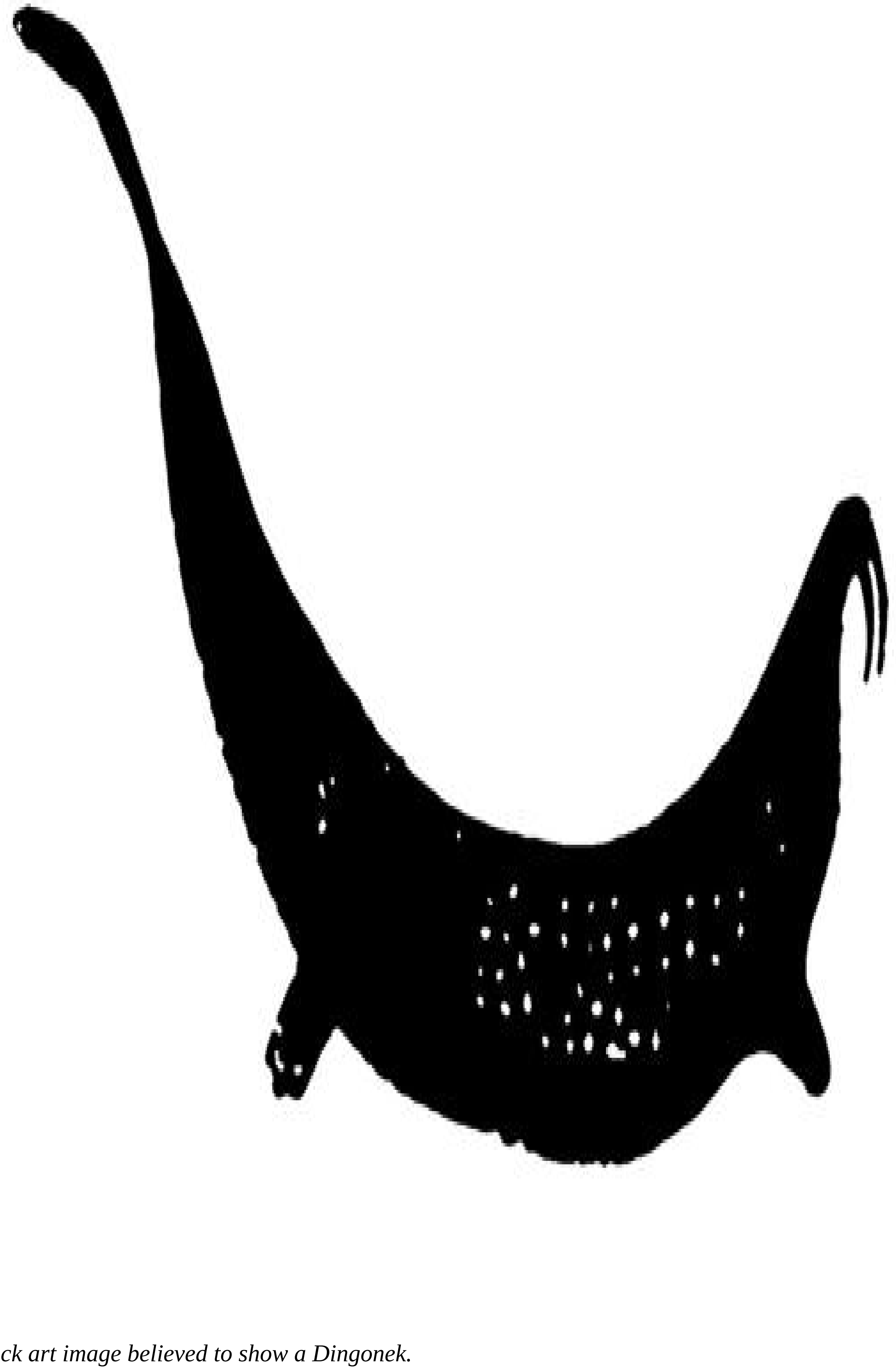
Location: river systems in Kenya, Tanzania and perhaps throughout sub-Saharan Africa (if similarly described beasts are regarded as the same sort of creature)

The Dingonek in lore and literature The east African Dingonek is a remarkable aquatic or amphibious cryptid, our knowledge of which is based almost entirely on a few accounts from the early 1900s. All come from Kenyan and Tanzanian rivers, some of which flow into Lake Victoria. As is typical for creatures described in cryptozoology books, the original descriptions are vague and do not clearly describe a recognizable sort of animal. What then happens is that cryptozoologists put together the different reported features, think they can determine the creature's identity, and end up with a 'classified', anatomically plausible version of the animal. It is this version of the creature that ends up being illustrated and believed in by cryptozoological enthusiasts as the true identity of the animal behind the original reports.

In this case, Dingonek accounts refer to a large (5-6m long), spotted, scaly water beast that has an otter- or lion-like head, small ears, short legs, a long, broad tail and, most remarkably, a pair of long, white tusks in the upper jaw. The creature was reported by several european explorers and adventurers who learnt about it from local people. One hunter, John Alfred Jordan, apparently caught sight of a Dingonek in 1907 and tried to shoot it. This creature is sometimes dubbed the 'water lion' and is supposedly the same as the Ndamathia, Ol-maima, Muru-ngu, Dilali and Mamaimé reported by other peoples across Africa from the Central African Republic in the north to Zimbabwe in the south.

Those large upper jaw tusks have led cryptozoologists to suggest that the Dingonek is an aquatically-adapted, walrus-like sabre-toothed cat! Heuvelmans argued in his 1978 book *Les Derniers Dragons d'Afrique* that the large upper canines of sabre-tooths perhaps encouraged them to evolve in a sort of walrus-like direction whereby the enlarged canines became modified for use in hauling out onto riverbanks, not to dispatch prey. He explained the 'scaly' appearance of the animal as mistaken references to light seen shining off a reflective pelage where the wet fur had massed into small clumps (Heuvelmans 1978, Shuker 1989).

All of this sounds ridiculous (and it's certainly not supported by fossil or other evidence). However, a remarkable piece of rock art discovered at Brackfontein Ridge in South Africa really does depict a tusked, long-tailed, walrus-like quadruped, shown approaching a hippo-like beast while in a swimming pose.



Rock art image believed to show a Dingonek.

Confronting the Dingonek The Dingonek reports are so weird that we are at a loss to provide any sort of half-decent explanation. Furthermore, the fact that the Brackfontein Ridge rock illustration seems to depict a matching animal seemingly provides support for the notion that Heuvelmans and Shuker might be right, and that walrus-like jungle monsters really do exist. However, a few things need saying, and they haven't been said (or, at least, said clearly enough) in the cryptozoological literature.

For one thing, none of the Dingonek accounts are really good enough for us to be at all confident about the creature's appearance, or indeed its existence. As implied above, we face a problem when we combine (1) local lore and legend with (2) an alleged eyewitness account from a European person, and (3) a precise hypothesis about the imagined creature's identity and evolutionary history. Increasingly, it seems that these mashups - the standard approach in conventional cryptozoology, as advocated by Heuvelmans (1982) - are doomed to failure. Such legends and accounts *might* be based on real animals, but they might not be: they might combine a spiritual view of the world with erroneous interpretations and codified tales that impart knowledge, act as warnings or morals, or are simply remembered for entertainment (Rabbit 2000). Because ideas about spirit-creatures and malevolent entities are frequently deliberately vague, we might be making a big mistake when we imagine them as descriptions of flesh-and-blood creatures.

On a similar note, the frequent assumption in cryptozoology that creatures with different names represent the same flesh-and-blood species is very likely often wrong. If we look in detail at the features used to link such entities as the Dingonek, Muru-ngu, Dilali and so on, we find that their association is far from convincing. Indeed, our treatment here of those assorted water-beasts - we're writing as if they're all names of the same one entity - only perpetuates what is probably a major mistake. The main point here is that you would need to be an experienced and specialised expert on African folklore, culture and linguistics to properly appreciate the context of these monsters. We can't do research of that sort, and we can't help but feel that Heuvelmans and other cryptozoological writers have only investigated the subject in a fashion that is both cursory and loaded with assumptions.

Indeed, despite his own confidence, and despite the enthusiastic support he reviews from his followers, Heuvelmans is notorious for lumping together discordant accounts in order to 'create' the cryptids he endorsed. This is, in fact, one of the primary flaws of his research, affecting his hypotheses about African water monsters (Meurger & Gagnon 1988), sea-serpents (Magin 1996), krakens and other non-serpentine sea monsters (Paxton 2004), the South American Minhocão and others.

As for John Alfred Jordan's eyewitness account of 1907: this is related as a colourful (but seemingly non-fictional) anecdote, the creature being described by Jordan as "a reptilian bounder" and "beast-fish" witnessed submerged in a swift current, using "slow, lazy swishes" of its "broad tail fin" to stay in place (Bronson 1910). Jordan also described the animal's head (*not* its whole body, as some researchers seem to have thought) as leopard-like in shape, and also referred to two white fangs, armadillo-like scales, and a leopard-like colouring and markings. The most likely interpretation of this creature is that it was a short-headed, heavily spotted crocodile, its short and supposedly cat-like head being the result of substantial damage. Wild crocodiles missing massive portions of their skulls have been reported on several occasions (e.g., Irwin 1996), and it's plausible that such a creature, witnessed through fast-flowing water, could well appear short-headed.

Finally, what about that piece of rock art? It should be noted that the illustration features two remarkable, mystery creatures, the other being a hippo-shaped animal covered in long spines. Rock art produced around the world demonstrates that people have often illustrated mythical or wholly imaginable creatures: there are examples from the Palaeolithic of Europe (Battersby 1997), and from prehistoric North America and elsewhere. Rather than being a faithful reproduction of an unknown animal (or, rather, *two* unknown animals), the illustration might more plausibly show fabricated or mythical entities.

The speculative Dingonek Despite all that we've just said, we found it irresistible to imagine the Dingonek as the great, sabre-toothed water-cat of the cryptozoological literature. As per some of the cryptids we feature, we don't really have much to add in the way of speculative biology here, since Heuvelmans (1978), Shuker (1989) and others have already said just about everything there is to say on the possible biology and evolution of this animal.

Encouraged by competition from feline cats, a lineage of African sabretooths - the dingonekines - took to amphibious and eventually fully aquatic life. They became giants, insulated by fat and thick skin, and hence eventually came to superficially resemble the walruses of the far north. The largest, most familiar, and most walrus-like of them all is *Dingonek odobenomimus*. Like other pinnipeds, walruses possess a short tail, perhaps because a lengthy tail loses heat in cold climates. But dingonekines evolved in the tropics, where there were no such evolutionary pressures, and they have hence enlarged, lengthened and broadened the tail to the extent that it now serves a useful function in swimming. A similar pattern of tail evolution occurred in the earliest sirenians and cetaceans.

Little is known about the predatory behaviour of these remarkable giant, aquatic cats. It is inferred that they ambush hoofed mammals and other prey that come to the water, though they presumably also prey on large fish. Heuvelmans (1978) was inspired by the possibility that, like the convergently similar walruses, dingonekines might use their hyper-enlarged upper canines in digging, hauling out onto land and so on. However, dingonekine canines are far shorter, more delicate and far less robustly rooted than those of walruses, indicating that they do not use their teeth in the same fashion. Ultimately, detailed behavioural studies or microwear analyses of dingonekine teeth are needed to test these ideas, however. It should also be noted that walrus upper canines are important in acting as 'distance guides' that help these animals feel their way along the seafloor when foraging for benthic molluscs. As yet, there are no indications that dingonekines are similarly specialised for this way of life, though suction-feeding adaptations should be searched for the next time a dingonekine carcass or skull becomes available for study. As it *surely* will.

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Heuvelmans, B. 1978. *Les Derniers Dragons d'Afrique*. Plon, Paris.

Heuvelmans, B. 1982. What is cryptozoology? *Cryptozoology* 1, 1-12.

Irwin, S. 1996. Survival of a large *Crocodylus porosus* despite significant lower jaw loss. *Memoirs of the Queensland Museum* 39, 338.

Magin, U. 1996. St George without a dragon: Bernard Heuvelmans and the sea serpent. In Moore, S. (ed) *Fortean Studies Volume 3*. John Brown Publishing (London), pp. 223-234.

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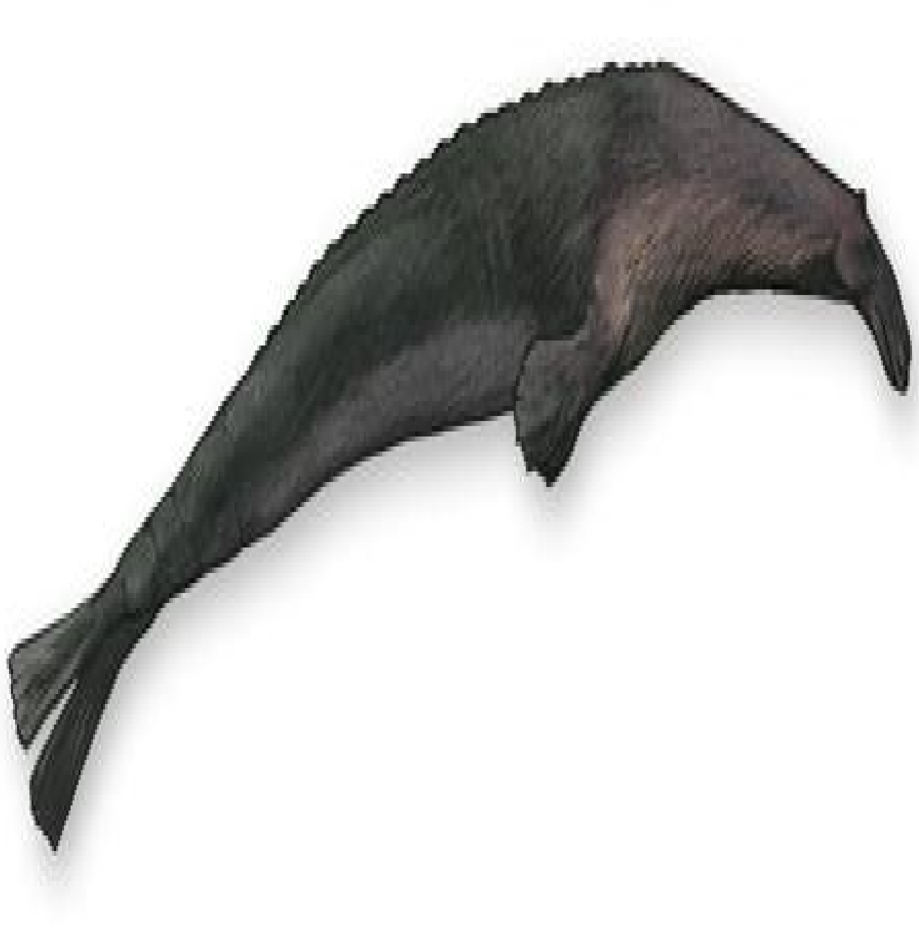
Paxton, C. G. M. 2004. Giant squids are red herrings: why *Architeuthis* is an unlikely source of sea monster sightings. *The Cryptozoology Review* 4 (2), 10-16.

Rabbit, J. 2000. Native and eyewitness testimony in cryptozoology. *The Cryptozoology Review* 4 (1), 11-18.

Cadborosaurus

Horse-headed 'mega-serpent' of the North Pacific



Location: Cadboro Bay and surrounding region in the NE Pacific, British Columbia
Time: early 1930s to present, but with First Nations legends and accounts supposedly referring to the same creature **Caddy: the literature and lore** Giant, serpentine 'sea-serpents' - often described as having horse or camel-like heads - have been reported from waters worldwide, but among the most famous of these alleged mystery marine beasts is Cadborosaurus, so-named due to its association with Cadboro Bay in British Columbia. Sightings of Cadborosaurus - or 'Caddy' - essentially extend back to the 1930s and have been made especially famous by stories about the discovery of a Cadborosaurus corpse, recovered from the stomach of a sperm whale and photographed on the slipway of a whaling station at Naden Harbour in the Queen Charlotte Islands.

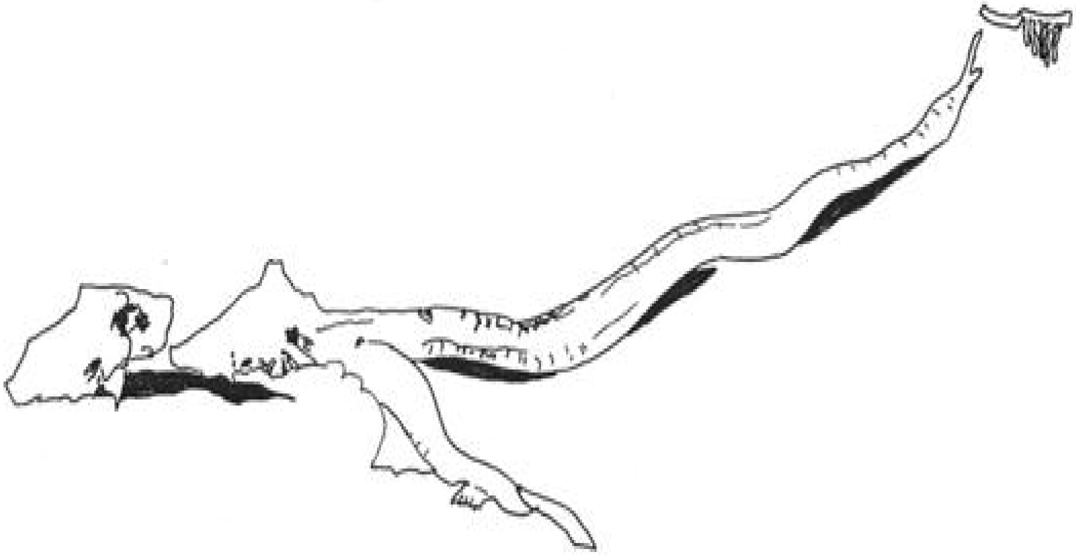
This carcass - long-bodied, with a fluked tail and a vaguely horse-like head - was photographed in 1932 but did not become discussed in public and the literature until the 1990s. Two researchers in particular - Paul LeBlond and Eric Bousfield - have championed the idea that the carcass demonstrates the reality of this creature.

Numerous sightings made at sea are thought to be of the same species of unknown animal. However, these accounts are really quite discordant. Some describe slender, serpentine objects that form serrated hoops while others refer to bulky, large-eyes creatures, or to giraffe-necked animals with horns. Among the most intriguing of accounts (intriguing because it involves a great amount of anatomical information) is that published by William Hagelund in 1987 and describing an encounter that supposedly happened in 1968. Hagelund described his capture of an alleged baby Cadborosaurus, 40cm long, armour-plated on top and with long, slender jaws. Bousfield and LeBlond have argued in books and articles that the 1932 carcass, the Hagelund 'baby' of 1968, and the Cadborosaurus creatures seen at sea all describe the same animals, and they have been so confident about its existence that they named it as a new species - *Cadborosaurus willsi* - in 1995 (Bousfield & LeBlond 1995, LeBlond & Bousfield 1995).

Because the Hagelund 'baby' was obviously swimming independently and taking care of itself, because cadborosaur sightings (sometimes) describe creatures that sound vaguely reptilian, and because there's a long tradition of interpreting sea-serpent accounts as surviving prehistoric marine reptiles, Bousfield and LeBlond make the ridiculous suggestion that their *Cadborosaurus* is a strongly modified, serpentine plesiosaur (Bousfield & LeBlond 1995, LeBlond & Bousfield 1995).

Demolishing Cadborosaurus As honest sceptics, we aren't about to discard entirely the idea that people have indeed encountered unknown creatures at sea. Maybe some cadborosaur accounts really do describe meetings with real unknown animals. However, a critical reading of the published accounts reveals that most if not all can be explained as (often brief) observations of floating logs, kelp strands, swimming deer, seals or other known phenomena. Indeed, the best accounts - the ones that get redrawn and inadvertently embellished for books on cryptids - almost certainly depict encounters with swimming moose and elephant seals, both of which can be startling, frightening encounters involving surprisingly big animals. The idea promoted by Bousfield and LeBlond (that '*Cadborosaurus*' is a serpentine, post-Mesozoic plesiosaur descendant) is flawed nonsense (Ellis 1994, Bauer & Russell 1996, Naish 2001, Woodley *et al*. 2012).

The famous '*Cadborosaurus*' carcass of 1932 looks like a mangled carcass of some sort, but it is probably that of a shark or other large fish: there is no reason to honestly think that it really represents an otherwise unknown, horse-headed mega-serpent. Furthermore, we know from other cases from the 1930s that people were routinely fabricating and photographing '*Cadborosaurus*' carcasses at this time, cobbling them together from kelp stems, rocks and other bits of seaside junk (Naish 1997). As for the Hagelund 'baby', it was most likely a member of a known fish species, most probably a pipefish (Woodley *et al*. 2011).



During the 1930s, people were evidently in the habit of collecting assorted beach flotsam and using them to create 'Cadborosaurus carcasses'. These images are drawn from a 'carcass' supposedly *discovered at Camp Fircom, British Columbia. It's actually a montage made from kelp, rocks, shells and other objects.*

At the moment, then, there's simply no reason to think that the '*Cadborosaurus*' of the cryptozoological literature exists, and there is certainly no reason to take seriously Bousfield and LeBlond's claims that such creature is a radically weird, giant marine reptile. Loxton & Prothero (2013) make the very interesting point that ' *Cadborosaurus*' and other 'sea serpents' are merely the modern incarnation of the Hippocamp, the horse-headed sea monster depicted since ancient times and never meant to depict a real animal.

Speculation time Given that cadborosaur witnesses describe fur, whiskers and an overall mammalian demeanour, we reject Bousfield and LeBlond's ideas about surviving sauropterygians and feel it more likely that people have actually seen a gigantic, long-bodied mammal of some sort, perhaps a highly unusual pinniped related to some of the other pinnipeds described by astute cryptozoologists but ignored by mainstream biologists. Of course, this means that the technical name *Cadborosaurus* is a total misnomer, but that's ok: exactly the same thing happened with the fossil whale *Basilosaurus* (originally misidentified as a reptile).

Cadborosaurus is enormous and long-bodied, the substantial variation in body size and cranial ornamentation reported by witnesses reflecting substantial ontogenetic and sexual variation. Large adults are fully pelagic and stay away from coastlines whereas juveniles (less than 5m long) will forage in rocky areas at the water's edge and even partially self-beach when foraging for invertebrates in tidal pools. The long, flexible and immensely powerful posterior part of the body means that the animal can pull and push itself back into the water even when near wholly beached.

The muscular power in the posterior part of the body (a tail is absent: what looks like a tail are really two partially fused hindlimbs) also allows *Cadborosaurus* to put on a phenomenal burst of speed and make it one of the fastest creatures of the seas - able to outstrip most vessels when at a sprint. It uses this speed in pursuing agile pelagic fish, its highly acute eyesight, hearing and sensitivity to vibrations and motion also contributing to its success as a predator. Combining stupendous size, an incredible turn of speed, hyper-acute senses and a wit, charm and pluck all its own, it's no wonder that *Cadborosaurus* continues to evade the tyrannical hand of Scientific Man… except for the Naden Harbour carcass, which really is a dead *Cadborosaurus*, honest. Bousfield and LeBlond said so.

Bauer, A. M. & Russell, A. P. 1996. A living plesiosaur?: A critical assessment of the description of *Cadborosaurus willsi*. *Cryptozoology* 12, 1-18.

Bousfield, E. L. & LeBlond, P. H. 1995. An account of *Cadborosaurus willsi*, new genus, new species, a large

aquatic reptile from the Pacific coast of North America. *Amphipacifica* 1 (supplement 1), 1-25.

Ellis, R. 1994. Monsters of the Sea. Alfred A. Knopf, New York.

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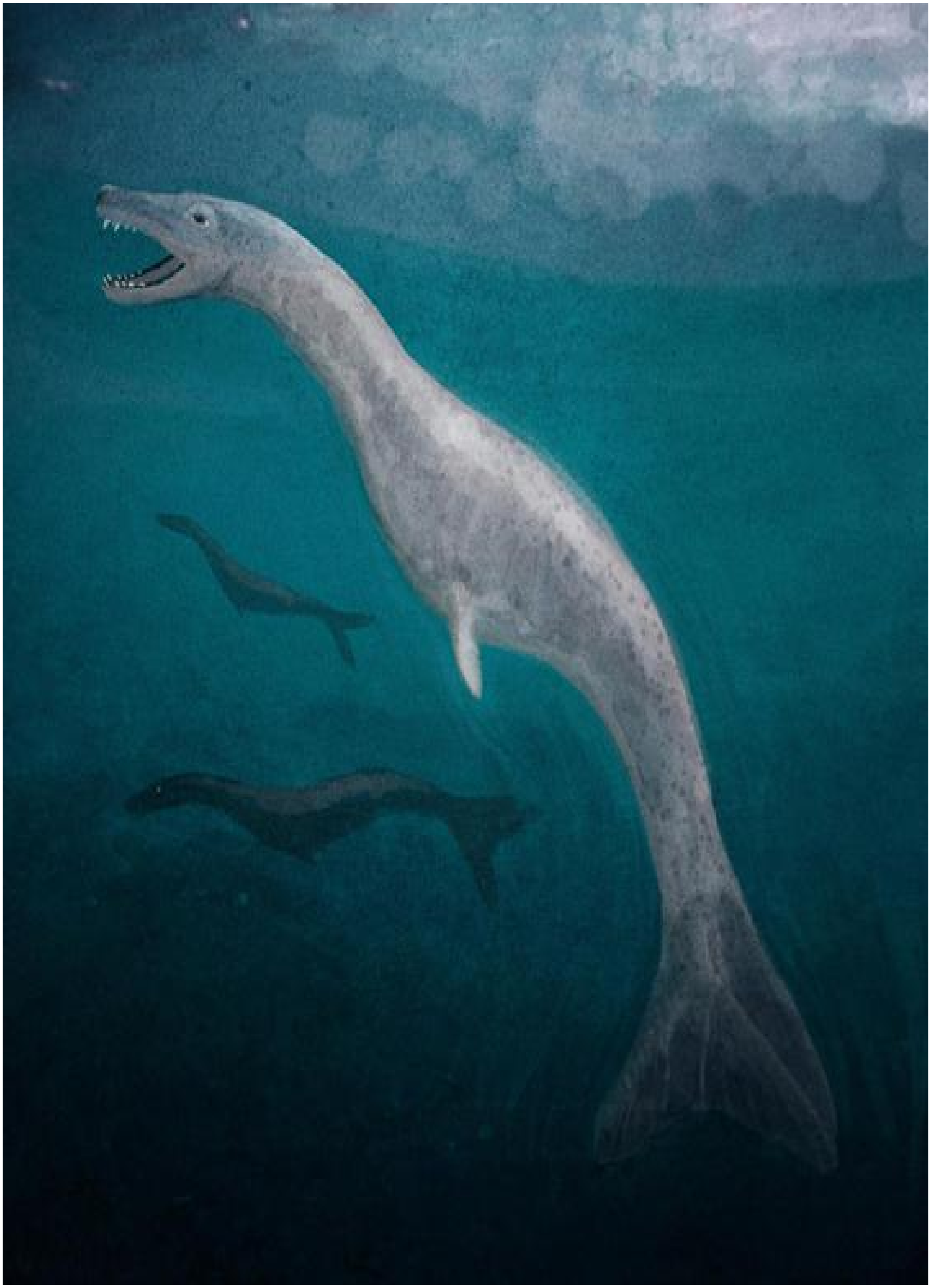
Tizheruk

Sometimes horned, dragon-like water monster of the Arctic



Location: coastal waters of the Pacific northwest of North America
Time: a creature of lore and legend, with no dates specified **The great northern sea-wolf** Among the several weird, cold-adapted monsters described by the Inuit people is Tizheruk, a semi-serpentine, horned or crested, predatory sea monster that inhabits the waters around King Island, Alaska and is even claimed to attack and kill people. The Tizheruk is supposedly the same creature as the Palraiyuk, reported from the more southerly island of Nunivak. Various other legendary water beasts from Inuit lore have also been regarded as the 'same animal' as the Tizheruk, including Wasgo, Sisiutl and Sea-Wolf (Swords 1991). Artifacts depicting these creatures show a vaguely wolf-like head with a bulbous nose, massive (sometimes pointed) tongue and large, vertically projecting horns. They are meant to be large, perhaps even bigger than a Killer whale *Orcinus orca*.

While the Tizheruk sounds like an extraordinary (read: unlikely) beast, its description and reported behaviour might, some authors suggest, be based on kernels of truth. As a result we see a pattern frequently employed by cryptozoologists: the attempted rationalisation or de-mythification of a fantastic beast whereby writers discard the remarkable and 'tone down' the weirdness of mythical creatures to make them more identifiable. This issue has often been remarked on. Meurger (1988), describing mythical animals as part of a "great tree of indigenous beliefs" poignantly noted that "those who believe in separating 'facts' from 'superstitions' in order to find an unknown zoological creature under the tree's foliage, risk reducing the tree trunk to the dimensions of a tooth pick before they have finished".

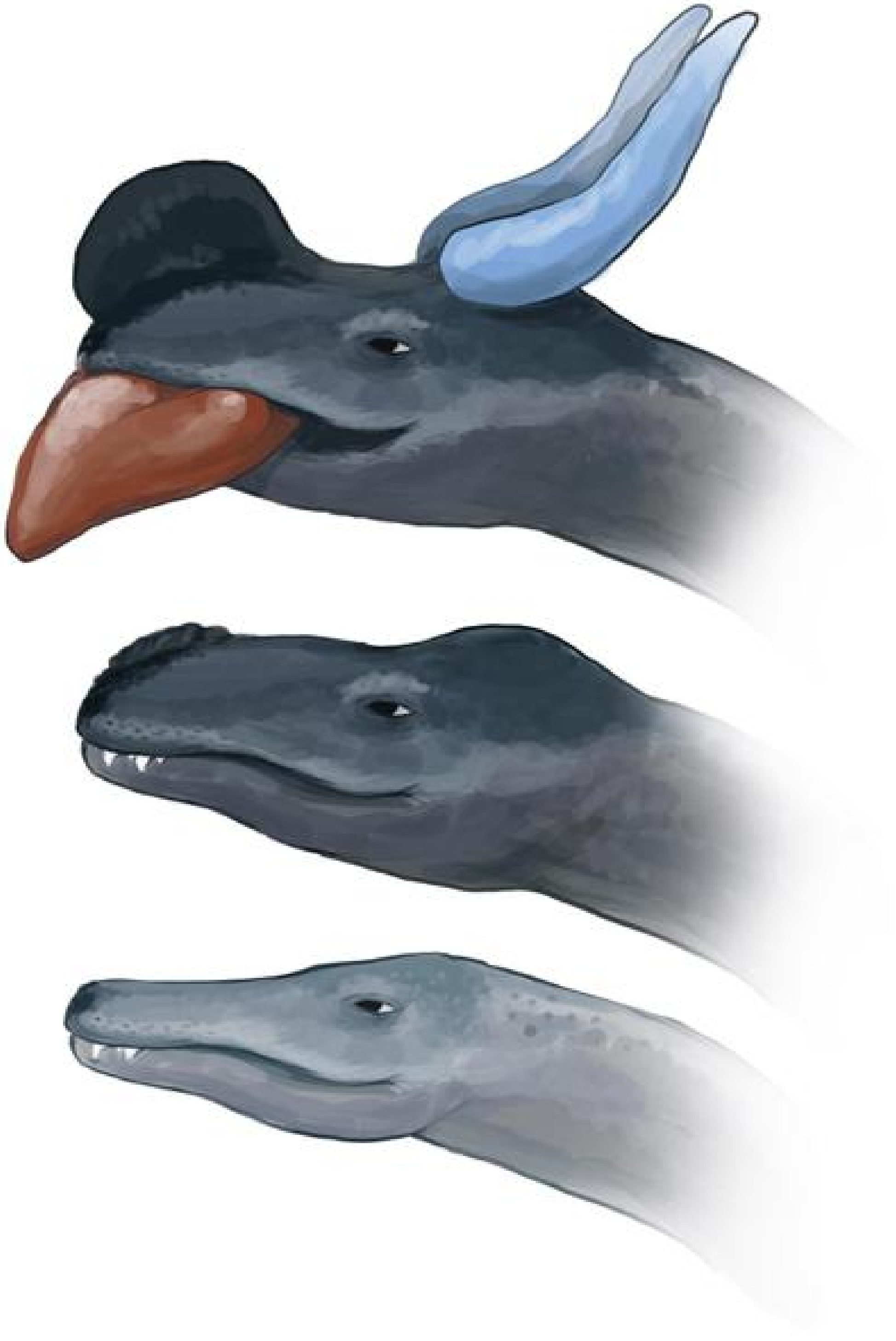
Roy Mackal - the prominent cryptozoologist mentioned several times in this book (and, we have to say, all too frequently associated with over-enthusiastic speculation and poor deduction) - wrote about the Tizheruk in *Searching for Hidden Animals* (Mackal 1980). Because the creature sounds vaguely seal-like in some accounts (with an emphasis on the *vaguely*), because it is long-necked, and because (according to accounts) it can be attracted to a boat if the occupants tap on the hull, Mackal suggested that the Tizheruk might be a large, predatory pinniped rather like the Leopard seal *Hydrurga leptonyx*.

Hydrurga is part of a mostly Southern Hemisphere phocid seal group called the Lobodontini: if Tizheruk is similar to *Hydrurga*, it is would either have to be a unique, Northern Hemisphere lobodontine, or a convergently similar member of another seal clade. In any case, for this idea to be true, the more fantastic traits attributed to the creature - including its serpentine form, gigantic size, horns and giant tongue - either have to be ignored or explained away. Mackal (1983) suggested that a reduction or even loss of the forelimbs could explain the more 'snake-like' form of the Tizheruk and also suggested that mobile ears or ear-like protuberances might explain the 'horns'. The presence of ears wouldn't be in keeping with a phocid identification (given that they lack external ears: in fact, they're often called 'earless seals') and would be more consistent with an otariid identification (otariids: sea lions and fur seals). Incidentally, Mackal also suggested that Steller's sea-ape - another marine conundrum - might be a juvenile Tizheruk.

Tizheruk: alas, probably not real In reality, we think that Mackal is guilty of picking and choosing favoured characters attributed to a mythological creature. The Tizheruk's alleged interest in hull-tapping behaviour sounds *Hydrurga* -like, but none of its other features do, and Mackal essentially had to bend over backwards in order to shoehorn the creature's other features into a pinniped mould. Something not emphasised by Mackal is that the behavioural traits concerned are from age-old folk tales, not modern eyewitness accounts or even friend-of-a-friend stories.

Indeed, the various sea monster petroglyphs and artefacts supposedly depicting Tizheruk, Sisiutl and Wasgo (Swords 1991) look like a hodge-podge of scary, dragonesque water beasts of the sort imagined by people around the world. Did people depict these beasts because they were reporting genuine observations? Or were they being creative, imaginative, or illustrating or creating images of creature unknown outside of myth and story? We don't know, but it hardly seems obvious that the tales concerned should be accepted at face value as reliable references to a real, and unknown, animal.

A speculative Tizheruk



Imagined as a real pinniped, Tizheruk (we urge people to name it *Tizheruk suchocephalus*) is - like its distant cousins the Long-necked seal and Cadborosaurus - highly unusual compared to other pinniped species, being especially long-bodied, long-snouted and extraordinary in size. *Tizheruk* is indeed a phocid pinniped like *Hydrurga*, but it belongs to the same group as the remarkable elephant seals (*Mirounga*) and Hooded seal *Cystophora cristata*. Like these related species, it is able to inflate a sac-like organ as its snout tip when displaying to potential mates or rivals. Uniquely, it also possesses two soft, inflatable structures on the top of its head, both of which are concealed when not in use but erect and horn-like during display (they are inflated via tubes connected to the nostrils), *and* a great red bladder on its palate. This protrudes from the mouth during display, resembling a great lolling tongue. The male *Tizheruk* is in fact the most elaborate of pinnipeds when it comes to sexual display, an extreme 'end member' of a trend towards increasing showiness. Females lack these display organs and are somewhat smaller.

The forelimbs have been substantially reduced and are only present as bony splints invisible from the outside. A long, robust rostrum and conical teeth are used in macropredation: the Tizheruk eats smaller marine mammals (explaining artefacts which depict it with small whales in its jaws) as well as fish, and occasionally it will even grab humans from kayaks and piers and so on. It relies on inertial feeding, ripping prey to pieces with the jaws, tossing chunks of food into the mouth in crocodile-like fashion (Taylor 1987). Again, it has done away with the need to regularly bask, moult and breed on land and is now completely aquatic.

Readers may note the clear correlation between fully aquatic habits in pinnipeds and a propensity to remain undiscovered: this can be explained by their pelagic habits and rarity. In fact, the numbers of such cryptids are dwindling due to climate change, depleting fish stocks and other factors and it's likely that they will become extinct before discovery. Indeed, by not accepting the bold and plucky claims put forward by innovative cryptozoologists, short-sighted and cowardly biologists and conservationists have doomed an entire guild of gigantic, specialised pinnipeds to extinction. They should be ashamed of themselves. The writings of Mackal and

Heuvelmans were good enough for other cryptozoologists, why weren't they good enough for everyone else!?

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Swords, M. D. 1991. The wasgo or sisiutl: a cryptozoological sea-animal of the Pacific northwest coast of the Americas. *Journal of Scientific Exploration* 5 (1), 85-101.

Taylor, M. A. 1987. How tetrapods feed in water: a functional analysis by paradigm. *Zoological Journal of the Linnean Society* 91, 171-195.

Buru

Confusing swamp-monster with both fishy and reptilian traits

Location: the region around Ziro, Arunachal Pradash, northern India
Time: supposedly long-known, but first reported by Europeans in 1945-46

What is the Buru?

The Buru is an enigmatic aquatic or amphibious reptile-like or fish-like Asian animal. In several respects, it is an especially unusual cryptid in that it does not fit tidily in any of the categories usually associated with mystery beasts. Virtually all accounts of this animal repeat the features listed by anthropologist James Mills and explorer Charles Stonor after their 1945-46 expedition to document information on the creature, and latterly by *Daily Mail* journalist Ralph Izzard after he accompanied Mills and Stonor in 1948. Some local people explained that the animal had died out after the local swamps had been drained while others claimed that it was still in existence.

According to collected accounts, the Buru is a swamp-dwelling creature that - paradoxically - is said not to eat fish yet to represent a significant danger to people. It supposedly has an elongate body, a distinct neck region that can be "stretched out or drawn in", armour plates on the upper surface of its head, and a forked tongue. It is also said to have a flattened snout and both massive, fang-like teeth at the fronts of its jaws as well as flatter teeth (likened to human molars) further back. Accounts are inconsistent on other aspects of its anatomy. Paired side-fins are mentioned in some and clawed legs are discussed in others; a rounded tail with some sort of fringe at the base is also alluded to. Three rows of short, blunt spines are said to extend across its back and sides and it is also reported to be "dark blue blotched with white", with "a broad band of white" across its belly.

Especially curious details sometimes provided for it are viviparity (the ability to produce live babies rather than eggs), a possible burrowing and aestivation habit (whereby the creature digs into mud at the bottom of a drying pool and goes into an extended period of torpor until the water returns), and the production of a loud, hoarse bellow, emitted as the creature raises its head above the water surface. Some sources explain the name 'Buru' as an onomatopoeic reference to this noise.

Previous attempts to explain the Buru Based on this conflicting and confusing mass of details, writers have variously identified the buru as a surviving dinosaur of some sort, a large, aquatic monitor lizard, or a crocodile. However, the tail fin and aquatic habits have led others to suggest that it is a large freshwater fish. Karl Shuker proposed that the best identification for the Buru is that it is either a giant lungfish or a bonytongued fish related to the Arapaima or Pirarucu *Arapaima gigas* of South America, with the lungfish identification being his favoured suggestion (Shuker 1991). A lungfish identification doesn't seem unreasonable.

However, in the absence of any evidence that might support its existence we consider it more plausible that the varied features attributed to the Buru are muddled references to the features of diverse aquatic animals. In other words, we conclude that it's an imaginary entity based on features seen in different fish, swimming reptiles and other animals, all superimposed onto a 'big fish' template likely inspired by fleeting glimpses of unusually large specimens of locally occurring species.

Our own take on the Buru Accounts of the Buru are vague and contradictory but we ended up agreeing with those previous authors who interpret this Asian enigma as a new kind of aquatic monitor lizard. Swimming, amphibious monitors are already known from both Asia and Australasia, their aquatic adaptations including a laterally flattened tail, smooth scales, streamlined body and dorsally positioned nostrils (Christian 2004). The Buru is another aquatic varanid, but it's the most specialised known and by far the most cryptic. Its deep, laterally compressed tail, fully webbed feet and serrated dorsal fringe are novel features for a varanid: they have so confused local people that it's no wonder that the Buru has been described as fish-like.

The Buru is also especially large (3.5-4m long), and also unusually coloured for a varanid. Its heterodonty (it combines fang-like teeth with rounded, posterior ones) is not unprecedented within the group, however, and enable it to be an ecological generalist, able to exploit a broad diversity of prey. Its long, flexible neck sometimes enables it to reach the surface when submerged in shallow water (only its nostrils and snout tip break the surface) and it has evolved a suction-feeding habit not seen in any other lizard: by rapidly opening the jaws and expanding the throat, it can engulf and capture aquatic crustaceans and other submerged prey. Several reported features are accurate references to its natural history, this one included. It is also an expert digger, capable of excavating long burrows to escape drought, and it is further unique in being viviparous, its babies being born alive beneath the water.

The Buru is deeply nested within *Varanus*, specifically being a close relative of the Asian water monitor *V. salvator* and its relatives. However, a combination of features that make it uniquely well adapted for aquatic life, including a paddle-like tail, aquatic suction-feeding habit and viviparity, suggest that it could well represent the early stages in a new and important radiation of big-bodied, aquatic monitor lizards, poised to invade freshwater ecosystems across the continent… if only there weren't so many goddam humans in the way.

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Shuker, K. P. N. 1991. *Extraordinary Animals Worldwide*. Robert Hale, London.

Hoop Snake

Dangerous, fast-moving reptile with novel method of transit

Location: mostly south-eastern states of the USA but also elsewhere in the country, and in Canada and Australia
Time: 1600s to present, with the best accounts being from the late 1700s
Lore of the Hoop Snake The fear, dislike and respect that people worldwide have for snakes explains, in part, the large number of myths we have about these amazing creatures. When you combine this with the fact that people frequently only have fleeting glimpses of snakes and typically know next to nothing about snake diversity (snakes are an enormous, diverse group, containing over 3000 species), a rich lore of 'crypto-snakes' is the unsurprising result. Various reported snakes large and small don't match known species and might well represent undiscovered species. But other 'mystery' snakes are so outlandish that the very probably are *not* based on unknown species.

The Hoop Snake is a semi-legendary snake said to travel rapidly by grabbing its tail in its mouth to form a hoop and to then travel, as a living wheel, across the countryside in pursuit of prey. The form of the snake is not well described and in fact snakes of several different sorts feature in historic Hoop Snake depictions. The snake must be reasonably large, since the hoop is meant to be about 1m across, and also slender-bodied and with the small head more typical of non-venomous colubrids than vipers. When the travelling Hoop Snake sees or otherwise senses an animal it wants to attack, it releases its tail and flings itself, tail-first, at its quarry. Its tail is tipped with a deadly poisonous spike and kills whatever it impales.

'Explaining' Hoop Snakes Hoop Snakes are most prominently associated with the USA, most especially with south-eastern states like Louisiana and South Carolina where they have been the stuff of lore since the late 1600s at least. However, Hoop Snake legends also come from Canada and Australia. So far as we know, nobody that matters really believes in the concept of a snake that pursues people and other animal while rolled up in a hoop shape. Herpetologists have in fact been interested enough in the legend to put down financial rewards for proof of its existence. Field Museum herpetologist Karl Schmidt (1925) found evidence from historical sources that the legend originated with known snake species (one of several referred to vernacularly as 'Horn snakes') that have a spike-like organ at the tail tip (various snakes have these, perhaps because they help in discouraging predators or in securing purchase against the ground when burrowing). People seemed to believe that the spike was deployed as a weapon, and that the only way the snake could deploy it is by forming a circle and then launching itself " with his tail arising and pointed forward in the circle" (J. F. D. Smyth, 1784, quoted in Schmidt 1925).

In short, the widespread folk belief that some snakes have a dangerous tail-tip weapon seems to have given rise to the equally widespread myth that these snakes - already regarded as freakish, sinister creatures - moved in hoop-like fashion. There never was a Hoop Snake, and there probably never will be.

The Hoop Snake as something real and new We wanted to have some fun with the concept of the Hoop Snake and hence here we imagine a colubrid snake that really does move in the manner suggested by the legend. This idea isn't thoroughly outlandish (though it is, we happily admit, *mostly* outlandish) since in recent years is has been demonstrated that various real creatures will curl up into balls and roll downhill as an escape mechanism. Some pangolins do this, as do certain spiders, salamanders and toads. Admittedly, all of these animals easily convert themselves into a ball-like shape by merely folding in their limbs and (in the pangolins and salamanders) tucking their tails in beneath their bodies - they don't form hoops like the eponymous snake - but they at least show that there is a precedent for turning yourself into a round thing and rolling away at speed.

The Hoop Snake is unique in possessing a sting-like organ at the tail tip that it uses in both offence and defence. The interior of its mouth is heavily keratinised and perfectly shaped to receive the sharp end of the caudal sting: a thick keratinous flap seals the back of the mouth. Some famous historical interpretations of the Hoop Snake are inaccurate since they fail to illustrate this feature (Meurger & Gagnon 1988). The affinities of colubrid snakes are frequently determined by analysis of their highly spinose, paired male protrusible organs - the hemipenes. We tried our best to have a look at Hoop Snake genitals but the rapid wheel-like locomotion of these snakes made such an endeavour especially difficult.

Meurger, M. & Gagnon, C. 1988. *Lake Monster Traditions: A Cross-Cultural Analysis*. Fortean Times (London), pp. 320.

Schmidt, K. P. 1925. The Hoop Snake story, with some theories of its origin. *Natural History* Jan-Feb 1925.

Megalodon

One of the biggest predators of all time -- alive today!

Location: sightings from off the western coast of Australia and in the south-east Pacific
Time: 1918, and also 1920s and 30s **Megalodon alive** The seas are full of monsters. Or, they are according to some of the cryptozoological literature, anyway. As if numerous giant, as-yet-undiscovered marine mammals and reptiles and absurdly super-sized cephalopods aren't enough, cryptozoologists have also advocated the possibility that *Carcharocles megalodon* - popularly dubbed Megalodon or the Megatooth shark - is not just known from the fossil record, but that it might also survive to the present. Megatooth sharks are, unsurprisingly, known almost entirely from their enormous teeth, the largest specimens of which are an incredible 16.8cm long. Vertebral centra of Megatooth sharks are known in addition to teeth, but that's it.

Unsurprisingly, there has been much tendency to over-estimate the size of this giant. A total *conservative* length of approximately 15.9m was extrapolated by Gottfried *et al*. (1996) but they also calculated total lengths of as much as 20m for some individuals. These authors also suggested that *C. megalodon* had a deeper, blockier skull than the Great white shark *Carcharodon carcharias*.

While *C. megalodon* is often imagined to be a giant version of the modern Great white, it may only be distantly related to it. In fact, some experts allocate these sharks to entirely different sections of the shark family tree and at least three different technical names are used for *C. megalodon* (*Carcharocles megalodon, Carcharodon megalodon* and *Megaselachus megalodon*). Regardless, good evidence shows that Megalodon was ecologically similar to the Great white, albeit much larger and more powerful. Bite marks preserved on bones show that Megatooth sharks fed regularly on dolphins and baleen whales, though it remains unknown whether the bite marks we know of represent scavenging or the hunting of live cetaceans. Megatooth shark teeth are frequently found in areas where the remains of baleen whales are common (Purdy 1996), and both shared the same habitat.

Thanks to various popular books and magazine articles about mystery creatures (Shuker 1991, 1995, 1997), and also to a notorious and pretty atrocious 'faux-umentary' screened by the Discovery Channel in 2013, the idea that this gargantuan whale-eating predatory shark might have survived to the present day refuses to die. A tiny number of stories and alleged eyewitness encounters essentially make up the core of the case for Megalodon survival. In the best known and most oft-repeated, Australian naturalist David Stead described a tale related to him in 1918 by Australian crayfish fishermen in which an enormous, ghostly-white shark, perhaps 90m long, emerged from the deep to take their crayfish pots, mooring lines and whatever else was attached. This story has sometimes been taken semi-seriously, partly because Stead (a reputable and respected writer and researcher, greatly experienced in ichthyology) explained the reliable nature of his (anonymous) sources.

Megalodon survival is also supposedly supported by the discovery of teeth that are not fossilised or are supposedly coated in such a thin layer of manganese dioxide that they must surely be young, in geological terms.

Megalodon dead Alleged Megalodon survival was examined by Roesch (1998) who basically concluded that there is no reason to take alleged Megalodon survival at all seriously. We agree with his conclusions. Of the few Megalodon 'sightings', the one related by Stead is hardly reliable: the account is an entertaining anecdote that we cannot regard as evidence of any sort. Two giant shark sightings claimed to be possible Megalodon sightings are clearly poor descriptions of Whale sharks *Rhincodon typus*. There's also a story from the 1960s (recounted in a popular 1978 book) about a giant white shark, longer than 80m, spoken of by a ship's anonymous crew. So, we're left with *stories* : scary stories of the sort that seafarers enjoy telling other people when back on land. The case for Megalodon's survival is so weak that it isn't really "a case".

So far as we can tell from the fossil record, *C. megalodon* died out some time during the early part of the Pleistocene, presumably as cooling conditions reduced its preferred habitat (though, while writing this text, we learnt from palaeontologist colleagues that even a Pleistocene extinction date may be too recent). The supposedly young Megalodon teeth (the most famous of which were dredged up by the *Challenger* expedition of the 1870s) have been misinterpreted and there's no reason to think that they're geologically young, let alone modern (Roesch 1998).

The speculative part What, now, of our speculative parallel universe, where all the cryptids are real and megatooth sharks still swim the oceans? Again, it would be difficult to say anything speculative about Megalodon that hasn't already been said. In order that a giant, macropredatory, whale-eating shark might remain elusive and undocumented by biologists, it would have to be absurdly secretive, spending just about all of its time away from the surface, away from vessels, and away from the coastal regions where it would surely be discovered. It must, therefore, be a deepwater animal that specialises on prey that it can reliably encounter at depth, and it must have switched to this prey base some time since the Pliocene or start of the Pleistocene.

This evolutionary shift has occurred at breakneck speed: while a new, slower growth regime and occupation of an otherwise unexploited ecological niche have encouraged Megalodon to become substantially larger than the 20m or so achieved by its ancestors, it has not yet become fully abyssal like other deepwater sharks and still visits the surface to eat crayfish pots and small fishing vessels on occasion. It is sometimes ghostly white. We would have to imagine the new, abyssal Megalodon - arguably different enough to warrant classification as the new species *Carcharocles modernicus* - to haunt deepsea canyons and places where whales and elephant seals and so on are regular visitors.

Mainstream scientists admit that they know all too little of deepsea ecology, but the many creatures reliably documented in the cryptozoological literature demonstrate that they know even less than they admit. Bring on the day when those pompous, ivory-tower buffoons are stripped of their worthless titles and forced to admit what they've all been too blind to see! Then we will be free!

Gottfried, M. D., Compagno, L. J. V. & Bowman, S. C. 1996. Size and skeletal anatomy of the giant "megatooth" shark*Carcharodon megalodon*. In Klimley, A. P. & Ainley, D. G. (eds)*Great White Sharks: The Biology of Carcharodon carcharias.* Academic Press (San Diego), pp. 55-66.

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Ahool

Asian bat of unusual proportions and vicious habits.

Location: Western Java, Indonesia
Time: 1925 or 1927, though with other accounts supposedly made in 1956 and 1957

The Ahool: what the literature says Little has been written about the Ahool but it is generally supposed to belong to a type of monster familiar in folklore and creature stories worldwide: it's a giant, predatory, nocturnal winged terror, an inhabitant of remote mountainous places that is dangerous to people. According to english-language accounts that report Javanese descriptions, the Ahool is similar to a one-year-old child in body size and possesses a wingspan of 3-4 metres. It reportedly has a monkey-like face, large black eyes, and is covered with dark grey fur. Claws of some form are present on its forearms.

It is also highly vocal. Its loud call - repeated three times and described as a terrifying, howl-like "AH-OOooooo" - supposedly explains its name. Other behavioural snippets provided for the Ahool are that it flies low over rivers in pursuit of fish, that it kills people with its claws (rather than with its teeth), and that - when at rest - it squats on the forest floor with its wings held close to the sides of its body. The only specific account ever mentioned in connection with this creature is that reported by Ernst Bartels in either 1925 or 1927 while he was in the Salek Mountains near Cjengkol, Java. Apparently, he was woken by the sound of flapping wings and heard an animal call that could be described as "a-hool".

Can we explain the Ahool?

Could this creature really be what it sounds like: a gigantic bat, the largest by far? The reference to large claws on the wings could perhaps refer to the large claws that fruit bats possess on both their thumbs and first fingers (in other living bats, the thumb is the only claw-bearing digit in the wing). Noisy flight, large eyes and a primate-like face are also features more typical of fruit bats than other kinds of bat. However, fruit bats possess long muzzles and, facially, are more like lemurs than monkeys. Furthermore, they are (as is well known) frugivores, not predators that eat fish or attack people. For these reasons it has been proposed that the Ahool accounts actually refer to a gigantic species of microbat: a member of one of the various bat lineages that use echolocation and frequently have short faces and proportionally small eyes (it turns out that 'microbats' are not a natural group, since some are closer to fruit bats than they are to other 'microbats'. Read on).

The largest known bat (the Large flying fox *Pteropus vampyrus*) has a maximum wingspan of 1.5m (or maybe a little more) and it may or may not be plausible that another bat species has reached a wingspan of 3 or even 4m. However, the various characteristics described for the Ahool are incongruous. Bats do not produce loud howls and are ill-suited for a style of resting that involves squatting on the ground.

One final point deserves mention. Most of what we think we know about the Ahool (that is, most of what we read about this creature in cryptozoology books) comes from a single 1966 article written by naturalist and author Ivan T. Sanderson. As mentioned in our introduction, Sanderson reported an enormous number of mystery animal accounts and peculiar animal observations over his career that were novel and never recorded by anyone else. Maybe he really was extraordinarily lucky, but there are widespread suspicions that some of the information he reported may not have been wholly trustworthy. In short, our suspicion is that the Ahool never existed at all.

Where the Ahool is real For the purposes of entertainment, however, let's now suppose that the Ahool *does* exist. Its wings and mammalian nature show that it really must be a giant bat, but it's certainly a highly novel one, with a unique vocal behaviour, flattened, anthropoid-like face and aggressive behaviour making it unlike the members of any known lineages. This combination of features is fascinating since, while they are inconsistent with the traditional idea that bats can be nearly divided into 'megabats' and 'microbats', they are less problematical when viewed within the context of recent molecular bat phylogenies.

Recent work indicates that 'microbats' are not a clade, but, rather, that horseshoe bats and their relatives (the rhinolophoids) are closer to megabats than they are to remaining microbats (Teeling *et al*. 2000, 2002, 2005, Hutcheon & Kirsch 2006). Bat experts have used several different names for these new groupings, with the most appropriate probably being Pteropodiformes for the rhinolophoid + megabat clade, and

Vespertilioniformes for the clade that contains all other bats. Anyway, the point is that there is a major bat clade that includes both the typically large, 'fox-faced' megabats (with their digit I and II wing claws) and the typically short-faced, notoriously ugly horseshoe bats. Giant size has also evolved within rhinolophoids, since the predatory ghost bats - the largest of which have wingspans of about 60cm - are members of this group.

The obvious conclusion is that the Ahool - it's called *Pithenycteris ahool* - belongs to a previously unrecognised pteropodiform lineage that still possesses the high wing-claw count primitive for modern bats (and still present in megabats), but is short-faced and (to our eyes) disturbingly ugly in facial form. *Pithenycteris* also has unique features of its own: it's remarkable in being a burly predator that rests and walks bipedally on the ground, and it even brings prey to the forest floor after tackling it in the air. Given that its lineage diverged from the megabat-rhinolophoid common ancestor more than 40 million years ago, it is somewhat expected that it followed its own, unique evolutionary pathway. Hm, funny how cryptids so often represent unique and unprecedented lineages within their respective groups...

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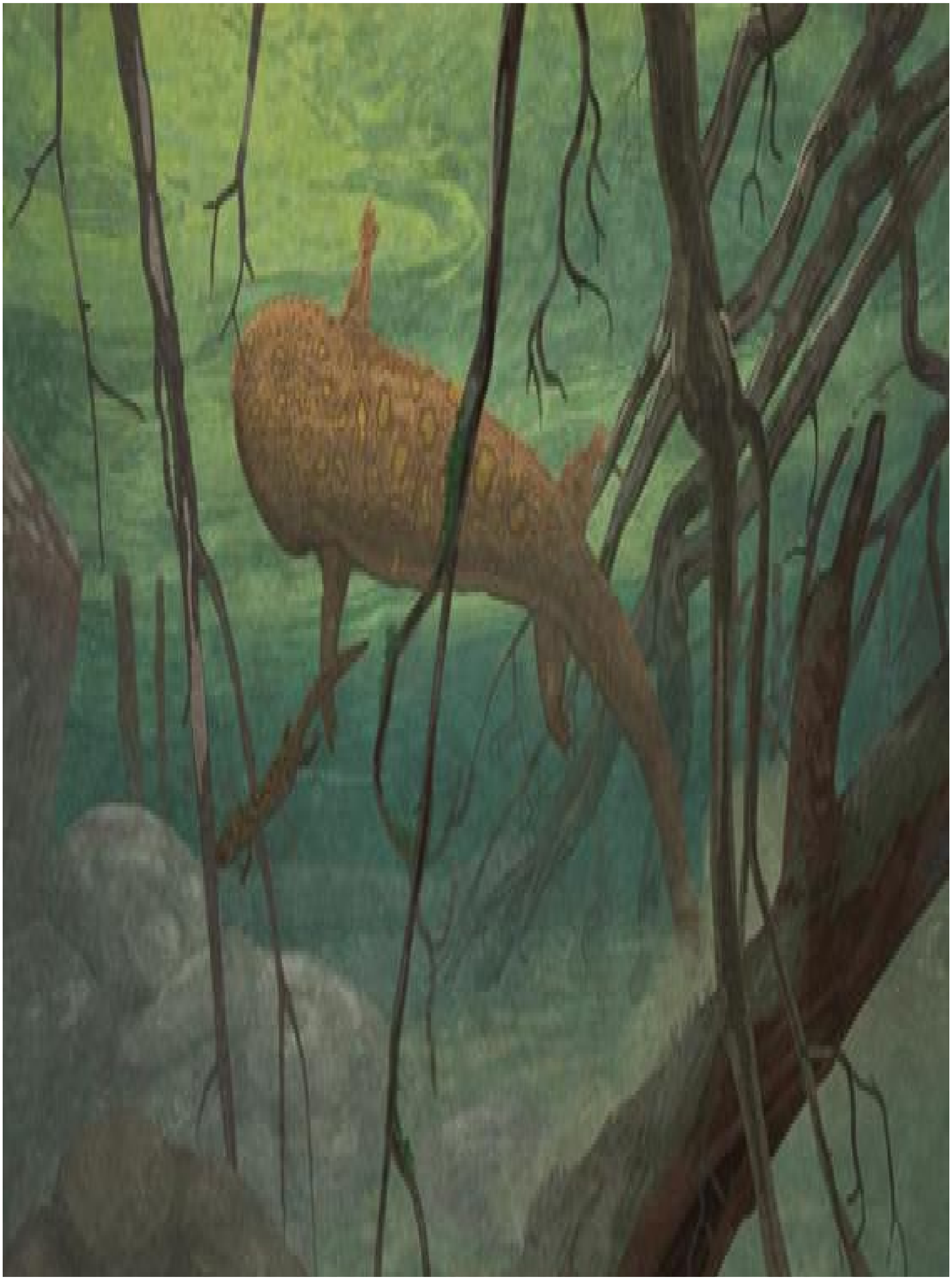
Trinity Alps Salamander

Giant river salamanders of the Californian mountains



Location: Trinity Alps, northern California, United States
Time: 1939 or 1940 to present **The lore and literature** Among North American herpetologists, explorers and adventurers, accounts of giant Californian mountain salamanders have circulated for a long time. Roughly the size of alligators, these animals have eluded all attempts to locate or capture them. While some consider them to be the product of exaggerated accounts or fisherman's tall tales, the presence of similar animals in Asia may hint at a different conclusion.

Giant salamanders are, today, restricted to Asia (despite a fossil record that involves North America and Europe). Over the past several decades, however, there have been persistent rumours that an unrecognised population of giant salamanders of the sort otherwise unique to Asia (and belonging to the genus *Andrias*) inhabit California, in particular the Trinity Alps in the north of the state.

The first report dates to 1939 or 1940 when Stanford University's George S. Myers was invited to examine a live Andrias kept as a pet by a commercial fisherman. The fisherman claimed to have captured the animal in a catfish trap in the Sacramento River. Myers considered the possibility that the animal might belong to an unknown, native Californian species: he thought that the brownish (rather than grey) ground colour and presence of large, well defined, yellowish spots on the animal's upper surface made it look different from Chinese and Japanese giant salamanders (Myers 1951). In fact, both features are present in Chinese and Japanese giant salamanders, something not noted by the cryptozoologists who have discussed this case. Myers also noted, however, that the animal might have originated as an escape since, in 1936 or 1937, a San Francisco firm had supposedly imported a consignment of giant salamanders. Chico State College's Thomas L. Rodgers (1962) stated that he had examined the Sacramento River salamander two days after it had been captured. According to Rodgers, it belonged to an "odd-fish fancier" called Wong Hong and was named Benny. Rodgers regarded this as the end of the mystery, and 'escaped pet' is the generally accepted explanation today.

As Rodgers (1962) and others have explained, however, additional people claimed to see and even capture gigantic salamanders in the Trinity Alps. An animal handler called Vern Harden said that he saw "a dozen" of them in Hubbard Lake in 1960, one of which he hooked and (allegedly) found to be 2.5m long. During the 1920s, Frank L. Griffith reported seeing a group of giant salamanders in New River, the biggest of which was 2.75m long (Rodgers 1962, Coleman 1997, Coleman & Huyghe 2003). Most recently, sightings from 2002 and 2005 were mentioned by cryptozoologist John Kirk.

A sorry verdict on giant salamanders As is so often the case with purported mystery animals, the possibility that northern California might be home to an undiscovered native amphibian approaching or exceeding a metre or two or three in length must rank as pretty low on the believability scale, though it does have to be said that the former presence in North America of giant salamanders does make these cases particularly intriguing. Indeed, several qualified herpetologists have been interested enough to investigate the reports. All, so far, have ended up empty handed. Rodgers suggested that, if the stories were true, they might be based on sightings of large *Dicamptodon* (Pacific giant salamanders), though - if this is true - an exceptional amount of exaggeration must have occurred given that *Dicamptodon* individuals larger than just 30cm would be exceptional.

The entire giant salamander lore seems most likely based on a set of tall-tales, inspired or embellished by the discovery of escaped or pet giant salamanders from China or Japan. The possible genuine existence of a real species of large, rare, native salamander in California is remotely plausible but difficult to consider seriously given extensive herpetological studies in the region.

North America's vanishing giants Supposing that we were to write some extensive speculative text and produce a speculative illustration featuring Californian giant salamanders, there is little we could do that would be original. But what the hell.

Here, we proposed that those sightings, accounts and captured specimens all demonstrate the genuine persistence of *Andrias* - the so-called Asian giant salamanders - in modern-day North America. The prominent yellow dorsal spots and giant size of this species are diagnostic. While it is tempting to interpret the Californian *Andrias* as a novel species, we conclude instead that it represents a persisting population of the fossil species *A. matthewi*, originally described from Nebraska but later reported from Saskatchewan and elsewhere in North America. Fossils show that *A. matthewi* was not only widespread but - in contrast to living Asian giant salamanders - able to inhabit lakes and ponds, not just rivers and streams.

The idea than an Andrias species was widespread in prehistoric times, only to become restricted to a few regions in the modern world, already has a precedent. Most people interested in salamanders are aware of the German fossil species *A. scheuchzeri*, famously misidentified during the 1700s as a person killed during the Biblical deluge. Little known is that Estes (1981) regarded A. scheuchzeri as conspecific with the living Chinese giant salamander. If this is true, this species once occurred from western Europe all the way to Japan (where the Chinese giant salamander is also known as a fossil). Similarly, the North American species once occurred across much of western North America.

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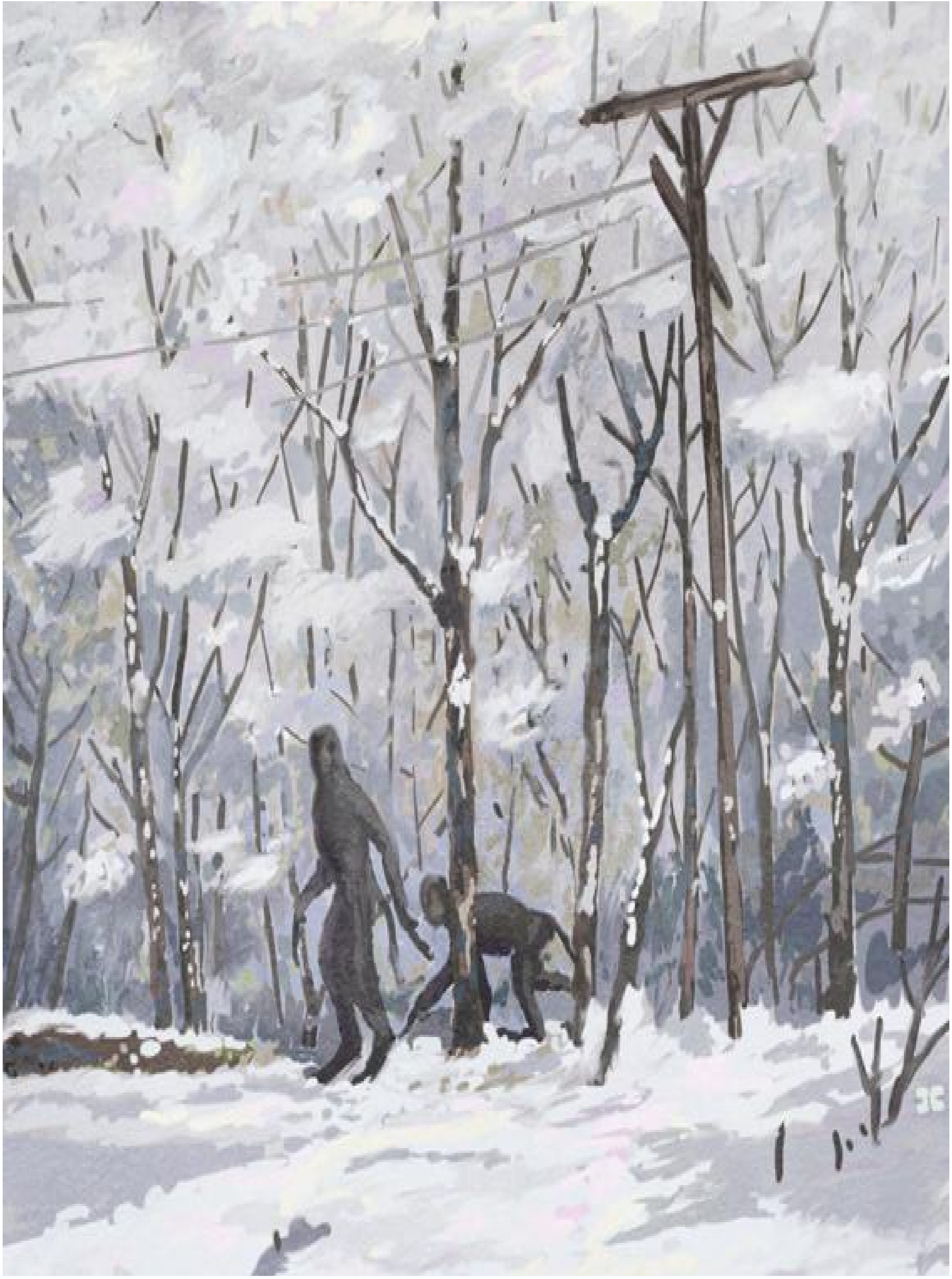
Goatman

Half goat, half man, half-serious



Location: various places in the southern and south-eastern USA
Time: 1957 to present **When Goatman comes** The term Goatman has been used for several bizarre, alleged mystery creatures seen in the southern and eastern parts of the USA, most notably in Maryland, Kentucky and Texas. As suggested by the jokey nature of the name and improbable form of the supposed creature, there is little indication that Goatman is anything more than a semi-comedic invention or urban myth. Indeed, the story behind one of the Goatmen - the one associated with Maryland - is that it was originally a scientist who experimented on goats while based at the Beltsville Agricultural Research Center. Somehow, an experiment went horribly wrong, and he was forever destined to roam the wilds and woods of Beltsville, axe in hand, attacking cars and unsuspecting walkers.

Goatman lore seemingly began in 1957 when people supposedly reported a 2m-tall, dark-furred creature, dubbed Goatman *not* for its horns (it was apparently interpreted as a Bigfoot-type creature) but for the fact that it had goat-like legs, with its ankle joints well up off the ground. These sightings were made in Prince George's County, Maryland, and accounts implied to be of the same creature were reported from the same region during the late 1960s and early 70s. Remember: these accounts described a Bigfoot-like animal with weird legs, *not* a 'Goatman' at all. However, by 1998, sightings were being claimed of a 'real' Goatman - that is, a horned, hairy, bipedal monster - in McLennan County, Texas (Newton 2005). Whether this Goatman represents extension of the Maryland legend to Texas, or whether it's a wholly separate invention, remains unknown.

Is there really a Goatman? No The concept of Goatman is still alive, as demonstrated by a case from July 2012 when a humanoid, white-furred creature photographed on the side of a mountain in Utah was widely reported as 'Goatman' by the media. Unsurprisingly, it proved to be a man in a suit, apparently learning how to disguise himself as a Mountain goat *Oreamnos americanus* in preparation for hunting season.

The idea of the goat-human hybrid is of course a familiar one thanks to satyrs, the horned, half-man, half-goats of Greek mythology. However, satyrs originally lacked the goat-like lower parts that we now associate with them, only being imagined this way after the Romans confused them with Faunas, a horned, forest god. Faunas was perhaps depicted as half-beast because he was associated with the fertility of cattle and other animals and (so far as we know) there are no special reasons for linking either satyrs or Faunas to the concept of human-goat 'hybrids'… though, incidentally, people have occasionally suggested that satyrs might be based on accounts of surviving Neanderthals or other hominids (Loofs-Wissowa 1994, Diehl 2001).

The real Goatman stands up If we once more play the speculative game and pretend that Goatman really exists, what could it be? If we remember the idea mentioned above that Goatman is so-named because it has long, digitigrade hindlimbs, and combine this with prior speculation in the cryptozoological literature, we have an answer. Namely: Goatman is a large, human-sized, endemic North American cursorial monkey, uniquely adapted for rapid bipedal running and (unlike virtually all other monkeys) routinely walking and running on its toes, its ankles being held well up away from the ground. After all, Coleman & Huyghe (1999) seriously proposed the existence of a 'giant monkey' category in their mystery primate classification.

According to these authors, 'giant monkeys' occur across the Americas and in Africa and Asia. Juvenile specimens are often mistakenly identified as kangaroos. We agree with Coleman and Huyghe, and with their brilliant intellectual partner Mark A. Hall, that giant monkeys are an evident and obvious truth, but we think that these authors have been too conservative. Whereas they made nods to the possibility that giant monkeys might be related in some way to the giant geladas and baboons known from the African fossil record, we think that an ancestrally African lineage of guenons - essentally, giant, semi-bipedal cousins of the cursorial Patas monkey *Erythrocebus patas* - moved into Asia and thence into the Americas during the Pleistocene. These large, superficially human-like giant monkeys are highly cryptic, able to rapidly sprint away from danger, but also capable of ferocious aggression when the need arises. Yup, sirree, *giant monkeys*.

Coleman & Huyghe 1999. *The Field Guide to Bigfoot, Yeti, and Other Mystery Primates Worldwide*. Avon Books, New York.

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Loofs-Wissowa, H. 1994. The penic rectus as a marker in human palaeontology? *Human Evolution* 9, 343-356.

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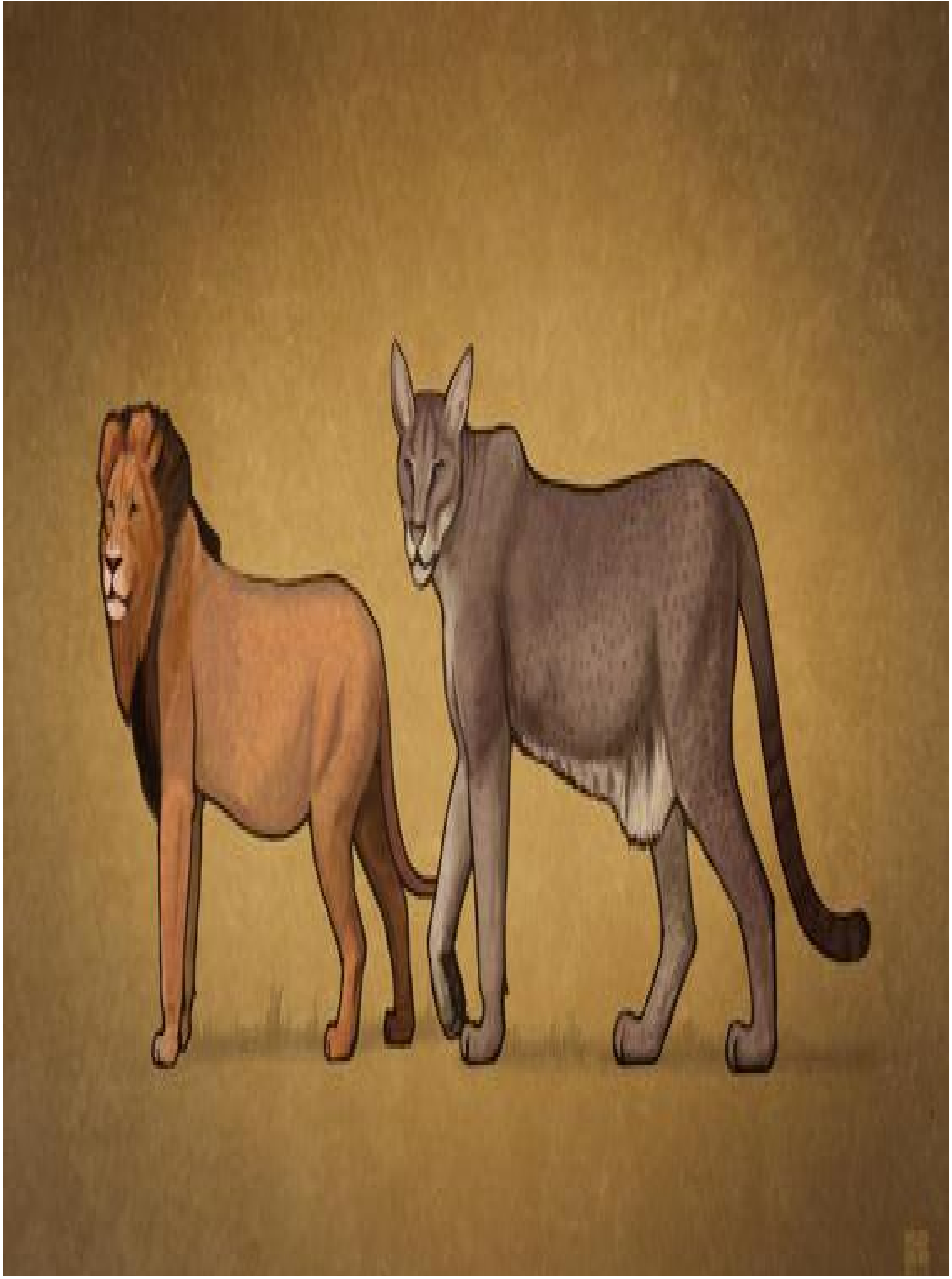
Mngwa

Great grey African man-eating monster cat



Time: 1922 and 1937, though with local lore apparently dating back to antiquity
Location: the Lindi region of Tanzania **Lore of the great grey killer cat** The Mngwa - the name means 'strange one' and we presume it's pronounced something like 'm-nug-wa' - is the name given to a gigantic grey cat, apparently the size of a donkey but superficially similar to a grey tabby cat. An alternative name is Nunda, apparently meaning 'fierce animal' (though the translations 'cruel man' and 'something heavy' have also been suggested). As with so many mystery animals, very little has ever been written about this creature and every discussion ever published on it (this one included) is based on the same handful of dubious accounts. The most useful account is that provided by Karl Shuker in his *Mystery Cats of the World* (Shuker 1989).

What's said by some to be an early reference to the Mngwa comes from a Swahili folk song dating to 1150. The best known accounts of this crypto-cat, however, come from the 1920s and 30s when a series of attacks occurred in the coastal Lindi region of Tanzania. Serving magistrate Captain William Hichens described how a man who slept overnight in a marketplace was attacked and killed by a giant cat during the night. When the man's body was found, he was clutching a mass of greyish hair "such as would come out of a lion's mane were it grasped and torn in a violent fight". The assailant was apparently no lion, for two eyewitnesses reported that they had seen the attack in progress: the cat concerned was indeed the "great mysterious Nunda", a great grey brindled cat that leapt from the shadows to attack the poor man. Several other killings that occurred in the same region over following months were also attributed to the Mngwa. Attempts to poison or shoot the beast were in vain but more grey hair was discovered.

A second spate of attacks occurred in 1937. Again, Hichens described the events that occurred. He was especially impressed with a wounded hunter - an experienced veteran who knew much about big cats and their ways - who assured him that his attacker was a Mngwa, and not a lion or leopard. Another interesting observation was made by a hunter named Patrick Bowen who tracked a Mngwa after it attacked a child at a small fishing village. Bowen reported that the tracks of the cat were like those of a leopard but far,

far larger than expected for this species - the tracks were "as large as those of the largest lion"!

Several intriguing ideas have been put forward to explain the identity of the Mngwa. On occasion, writers have drawn attention to the possibility that the Mngwa might represent a surviving population of a cat species otherwise known only from the fossil record. Karl Shuker (1989) suggested the Pleistocene cat *Panthera crassidens* in this vein, and the idea has also been mooted that the Mngwa might represent a sort of African tiger (some African fossils have been suggested on occasion to be from tigers or ancient relatives of tigers). More intriguing is Bernard Heuvelmans's suggestion that the Mngwa is not really a big cat at all, but a gigantic variant of a cat that is ordinarily less than 1m long and less than 20 kg in weight: the African golden cat *Profelis aurata*! (Heuvelmans 1986).

The Mngwa explained?

Assuming that the attacks attributed to the Mngwa really occurred, it seems most likely that lions were to blame: that greyish hair discovered with the 1922 victim may well have simply been lion fur, not that of a giant mystery cat. As for the peculiar appearance and size of the Mngwa, it is well known that lions occasionally retain spots and subtle striping into adulthood. Especially relevant here is the fact that Tanzania and the surrounding countries are home to an especially distinctive group of lions that are extremely large, have a greyish ground colour and wholly or partly lack manes (Patterson 2004). These lions are best known from the Tsavo region of Kenya and are notorious for the spate of man-eating that occurred there during the 1890s.

Rather than invoking survivors from distant prehistory or gigantic forms of normally small species, it seems most prudent to assume that the Mngwa lore and accounts are based on confused, hasty and frightened encounters with enormous, greyish, man-eating lions.

The bit where we fan the flames of speculation As described above, cryptozoologists have already produced a reasonable amount of speculation on the identity of the Mngwa. We decided to take Heuvelmans's idea from 1986 and run with it. As explained by Shuker (1989), possible support for the Golden Mega-Moggie Hypothesis comes from the substantial range of pelage variation present in the African golden cat, its surprisingly wide range (it was once thought mostly restricted to western Africa, but is known to present in the east and south as well), and its feisty, bloodthirsty demeanour. Even better, Hichens said that Mngwa had been heard *purring* on several occasions. Surely, here we find iron-clad and compelling support for the Mega-Moggie Hypothesis.

It turns out that our view of the African golden cat as a mid-sized species ignores the existence of a gigantic, macropredatory morph that evolved during the Pleistocene and persisted to the present in Tanzania. It manages to avoid competition with the lions and leopards of its habitat by… by… err, well, it just does, ok!

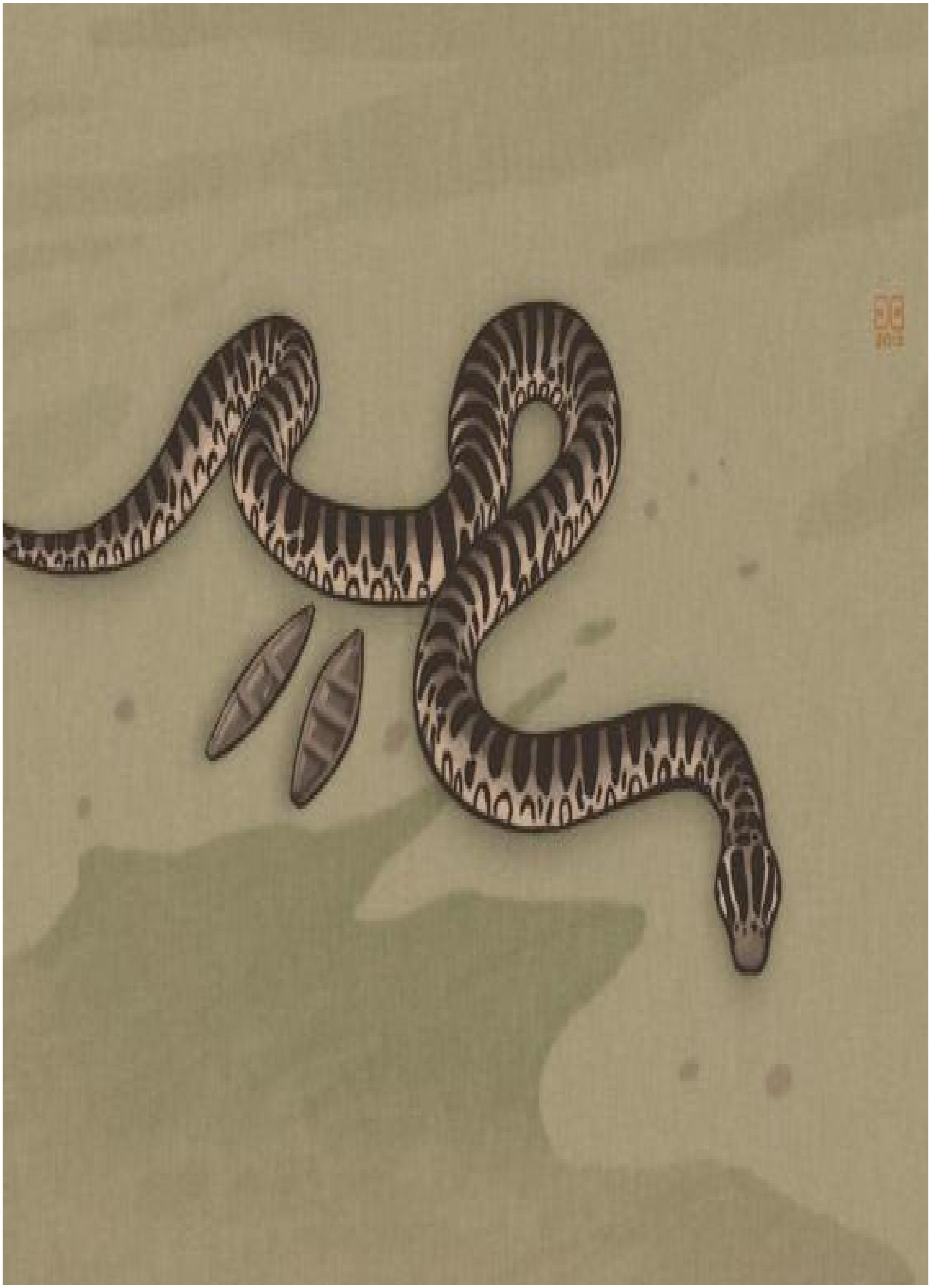
Heuvelmans, B. 1986. Annotated checklist of apparently unknown animals with which cryptozoology is concerned. *Cryptozoology* 5, 1-26.

Patterson, B. D. 2004. *The Lions of Tsavo: Exploring the Legacy of Africa's Notorious Man-Eaters*. McGraw-Hill, New York.

Shuker, K. P. N. 1989. *Mystery Cats of the World*. Robert Hale, London.

Minhocão

Long-bodied, channel-digging South American serpentine thing



Location: Brazil, Uruguay, Nicaragua and elsewhere in South America
Time: mostly late 1800s and early 1900s **Super-snakes and burrowing behemoths** Throughout the 20th century and before, South American explorers, adventurers and naturalists told fantastic tales of encounters with gigantic snakes and other monstrous creatures in the depths of the Amazon. The best known and most oft-recounted of these stories is Major Percy Fawcett's of 1907. Fawcett claimed a close encounter with an anaconda 19m long which he shot dead, also claiming that some other mega-anacondas from the Amazon must have "altogether dwarf[ed] that shot by me!". Some choose to believe these stories but it is mostly thought today that they result from exaggeration or confusion, or are simply unreliable tall tales that suspiciously lack any and all supporting evidence.

Originally discussed in connection with these giant snake stories are accounts referring to the Minhocão, a long-bodied animal said to be associated with deep water, marshes and river banks in Brazil. While sometimes said to be as much as 50m long and much like the super-anaconda referred to above, other accounts describe the Minhocão as wide as well as long, heavily armoured, and capable of churning up the ground, of diverting rivers and as having a pig-like snout and two mobile horns on its head. A Minhocão that supposedly got stuck in a crack in a rock had armadillo-like skin. The missing bark from a tree, witnessed near the town of Curitibanos in 1877, was attributed to the behaviour of a Minhocão, as were rumbling noises, earth tremors, overturned pine trees and disturbances in the water of a local pool (Heuvelmans 1995).

The Minhocão 'explained'

There have been a few efforts to rationalise this creature: to bring the accounts together and explain them as encounters with a new kind of large, cryptic creature. During the late 1800s, the German scientist Fritz Műller suggested that the Minhocão might be a gigantic lungfish, the 'horns' perhaps being a confused reference to the filament-like forefins of the South American lungfish *Lepidosiren*. Heuvelmans discussed the idea put forward by a Dr Budde that the creature is a modern-day glyptodont, but (as Heuvelmans observed) this is absurd because glyptodonts are herbivorous armadillo-like animals with a large, usually stiff carapace - hardly worm-like burrowers. Heuvelmans's own preferred explanation was no better: he thought the animal was a sort of long-bodied, armoured whale. He was inspired by erroneous suggestions that ancient Eocene whales like the enormous, long-bodied *Basilosaurus* had armour plates on their backs… one of several cases in his research where he was very much out-of-date, even for the time when he was writing (*On the Track* was first published in the 1950s).

Most recently, the burrowing habits, worm-like form and alleged carnivory of the Minhocão led Karl Shuker (1995) to suggest that it might be a gigantic caecilian. Caecilians are worm-like aquatic and burrowing amphibians, the biggest of which are about 1m long. Short, pale, extrusible tentacles on either side of the caecilian snout could plausibly be interpreted as 'horns' by a naive eyewitness. However, the notion of a gigantic caecilian several or many metres long is difficult to accept nor, as usual, are we really dealing with an especially robust or trustworthy set of eyewitness accounts in the first place. In other words, there probably is no unknown animal at the bottom of the Minhocão reports.

In fact, reading the several accounts of this creature provided in Heuvelmans's *On the Track*, it seems that descriptions of assorted creatures and landscape phenomena have been lumped together under the Minhocão heading (Heuvelmans 1995). Trenches and furrows encountered in the landscape might be nothing whatsoever to do with a giant, serpentine creature: they are more likely the result of ground subsidence, earthquakes, or perhaps the activities of other large animals, like cattle. Bark missing from a tree is hardly evidence for a giant, worm-like burrower, and the few reported eyewitness accounts attributed to the Minhocão are best attributed to anacondas and perhaps to big catfish and other known animals. It should also be noted that there are good reasons for thinking that limbless burrowers are mechanically unfeasible beyond a certain body size. Sadly, the notion of a gigantic caecilian, able to burst upwards from the sediment and grab an unwary cattle or human, is almost certainly an improbable one.

Stupendaconda!

The Minhocão is not a gigantic snake, nor do the giant snake stories from the Amazon refer to the same entity as the thing that people have labelled the Minhocão. But, what the hell, we wanted to illustrate a gigantic anaconda anyway. Based on the extremely reliable and undoubtedly authentic accounts reported by Fawcett and others, we propose the existence of a veritable super-anaconda that we dub *Stupendaconda portentificus*, or the Stupendaconda. Its existence safely puts to rest the idea that gigantic size can only evolve in snakes when global temperatures are at an all-time high (Head *et al*. 2009). What does a snake this large eat? Whatever it wants. *Stupendaconda* evolved alongside diverse large rodents, crocodyliforms, turtles and snakes, all of which it preyed upon in the past. A substantial decline in the diversity of these animals during the Holocene has resulted in *Stupendaconda* becoming rarer than it ever was, and it was never an abundant animal to begin with.

One of the most mysterious things about giant anacondas is that juvenile specimens have never been discovered or reported, despite the fact that this is the only time in their lives when they might easily be killed, captured and retained for study. Why is this? The reason is remarkable and preposterous, and challenges much of what we know about snake biology.

As is well known, adult Stupendacondas are gigantic beasts, 20m long or more. Rather than giving birth to umpteen live babies (as is normal for the other, smaller anaconda species), females grow one gigantic, hyper-developed mega-baby, the birth length of which is about 7m. That is, larger than virtually all large specimens of the largest known non-Stupendaconda large snakes. As predicted for an animal that puts so much investment into the growth of its baby, there is a strong maternal bond between the mother and juvenile and they stay in close contact for decades. This explains why Fawcett and other explorers often found several super-snakes in close proximity. Unfortunately, this reproductive strategy makes these snakes slow to replace themselves and prone to extinction. Today, they may be teetering on the brink. It may already be too late. Indeed, Fawcett himself may have single-handedly contributed to the downfall of one of the world's most incredible serpents.

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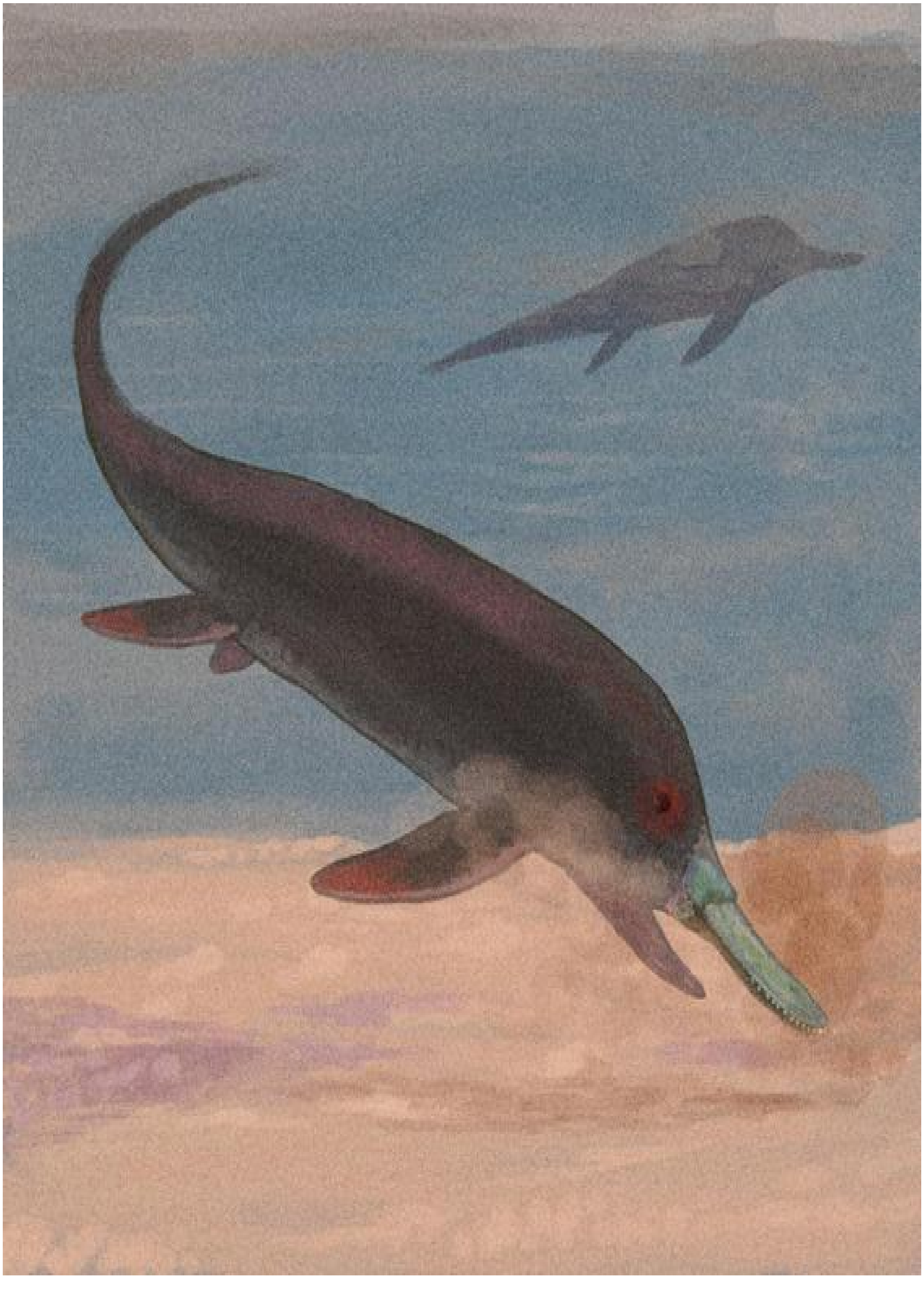
Shuker, K. P. N. 1995. *In Search of Prehistoric Survivors*. Blandford, London.

Gambo

Alleged 'Mesozoic marine reptile' carcass found on a Gambian beach



Location: Bungalow Beach, Gambia
Time: 1983

Gambo's story The supposedly reptilian, sea-monster cryptid now affectionately known as 'Gambo' is, like so many others, biologically plausible and appealing, if only it were real. The story goes that a young amateur naturalist called Owen Burnham was walking along Bungalow Beach in The Gambia in 1983 when he encountered the relatively fresh carcass of a 4m-long animal. It was a smooth-skinned, greyish or brownish, long-jawed, flippered reptile, lying on its belly. People arrived and removed the head to sell to tourists, the remainder of the body was buried where it lay, and Burnham wrote up his account for the letters page of the magazine *BBC Wildlife*, where it was published in 1986. Here it caught the attention of cryptozoological authors who later discussed the case at length (Bright 1989, Shuker 1986a, b, 1995). The fact that the body is supposedly buried at a specific location has resulted in several half-hearted attempts to excavate it, none of which have met any sort of success.

Burnham essentially described a short-necked, slender-tailed, long-jawed marine reptile sounding much like various of the short-necked polycotylid plesiosaurs known from the Cretaceous fossil record (short-necked plesiosaurs are typically referred to as pliosaurs, though note that some pliosaurs - polycotylids in particular - might be more closely related to long-necked plesiosaurs than they are to other pliosaurs). In fact, if the creature wasn't a short-necked plesiosaur, it's difficult to think what it could be… assuming, that is, that Burnham's description is accurate and trustworthy. Suggestions that the carcass might have been that of a manatee, dolphin or beaked whale have been made but don't really account for the features that Burnham described: none of these animals combine two pairs of flippers with long, multi-toothed jaws. Shuker (1986a, b, 1995) considered another Mesozoic marine reptile group - the metriorhynchids (a group of highly specialised, marine relatives of crocodiles) - as equally possible contenders for Gambo's identity.

> *Three Mesozoic marine reptile groups have - thanks to the Prehistoric Survivor Paradigm so popular among cryptozoological literalists - frequently been 'theorised back to life': the four-flippered, short-tailed plesiosaurs, the long-skulled metriorhynchid crocodylomorphs, and those gigantic, sea-going lizards, the mosasaurs.*

We should note that flippered, superficially crocodile-like sea beasts were already part of the cryptozoological canon prior to the publication of Burnham's account. These were termed 'marine saurians' by Heuvelmans (1968): he grouped various accounts together in this category, one of the most famous being the U28 story of 1915. This remarkable account describes how a u-boat's crew witnessed a gigantic quadrupedal sea reptile blasted high into the air by an underwater explosion erupting from the hull of the torpedoed British steamer the *Iberian*.

A sceptical view As just noted, various researchers have sought to explain the Gambo carcass as a misinterpreted, mangled dolphin or whale, perhaps a Shepherd's beaked whale *Tasmacetus shepherdi*. For this interpretation to work, the whale would somehow have to end up with two pairs of paddle-like limbs, lose its dorsal fin, and switch its muscular, fluked tail for a slender, more reptilian one without flukes. Burnham did note that one of the rear paddles had been torn off, perhaps showing that damage of some sort had affected the look of the carcass, and other witnesses (the other members of Burnham's family) did, apparently, think that the carcass was that of a dolphin (as, apparently, did the locals who removed its head). It's worth saying that a mutant dolphin with a decent pair of hindlimb flippers was captured in Japan in 2006. A four-flippered dolphin would need to lose its tail flukes and dorsal fin before it really resembled the Gambo carcass, but maybe this isn't such a bad explanation.

In the end, with just Burnham's account to go on, we can't go any further with the Gambo story: it's no more reliable and no more useful than the many similar anecdotes that have been published about other sea monsters, many of which are hoaxes or misinterpretations. That famous U28 account, for example, is almost certainly an outright fabrication. It exists in several distinctly different forms, features outlandish and impossible details (how does an undersea explosion blast a whale-sized monster so high into the air?), is unmentioned by its chief chronicler (Georg-Günther Freiherr von Forstner) in the detailed accounts he published elsewhere, originally featured an illustration that is almost certainly a redrawing of a stuffed, baby crocodile, is unmentioned in the otherwise highly detailed log, nor was a flailing marine saurian seen by any of the more than 60 *Iberian* survivors who watched the ship sink (Magin 1996, Dash 2009).

A (new) speculative look Traditional cryptozoology labours extensively under what's become known as the Prehistoric Survivor Paradigm (or PSP), the idea that cryptids are not only real but also represent the surviving descendants of groups otherwise known only from the fossil record. When confronted with accounts of creatures like Gambo, the majority of cryptozoologists have been persistently boring, interpreting these supposed creatures as surviving plesiosaurs, mosasaurs, Mesozoic crocodile relatives, or ancient archaeocete whales (Shuker 1995). We are not fans of the PSP: not only does it assume from the outset that cryptids represent new, valid species of large animal, it requires the fossil record to be an absolutely unreliable record of the history of life and (like other cryptozoological hypotheses about fossil animals) it is mostly based on anachronistic interpretations of the relevant creatures. The plesiosaurs, mosasaurs and metriorhynchids of the cryptozoological literature, for example, are the versions of these creatures illustrated and imagined during the 1960s and earlier, not the creatures as we think they really look. For these reasons, we wanted to do something new with Gambo.

Gambo is not actually a reptile at all. Instead, it is a gigantic, fully aquatic, marine-adapted monotreme, the largest and most specialised member of a platypus lineage that originated in Zealandia during the Cretaceous and then adapted to marine conditions as this landmass was flooded and gradually drowned during the course of the Cenozoic. We name it *Gambonessa burnhami*, its elongate and highly tactile rostrum being one of several features that links it with platypuses (a monotreme group whose fossil record begins in the Cretaceous and includes South American taxa as well as Australasian ones). The platypus-like form of its rostrum was missed by the initial witnesses: partial decomposition had caused the leathery covering to slip off, and the numerous polyodont teeth - an elaboration of the condition present in earlier platypuses - created a superficially crocodile-like appearance to the jaws.

Unlike other monotremes, *Gambonessa* has evolved away from an egg-laying habit and hence does not need to spend time on land. It is a viviparous monotreme. As a consequence, it has been able to evolve giant size and also to do away with the claws and distinct digits that aquatic tetrapods need in order to locomote on land and dig burrows or nests. Its pelagic lifestyle has enabled it to move from the south-western Pacific into both the Indian and Atlantic oceans where sightings have been made, most famously the *Ambon* account of 1904 and the notorious U28 incident of 1915. A curious parallel with the stranding records of the also-elusive Megamouth shark *Megachasma pelagios* have been noted, since a Megamouth once also stranded on the Atlantic coast of Africa (Séret &

Orstom 1995). This shows that is surely only a matter of time before *Gambonessa* specimens also turn up on the Brazilian coast, as Megamouths have (Amorim *et al*. 2000), and doubtless elsewhere. *Gambonessa* is also unusual among monotremes is that it has done away with fur, relying instead on insulative fat.

Truly, a remarkable beast - yet again, a unique and 'hyper-evolved' member of its group, representing the sort of creature long taken seriously by cryptozoologists but ignored by hidebound, sit-at-home, lily-livered mainstream scientists.

Amorim, A. F., Arfelli, C. A. & Castro, J. I. 2000. Description of a juvenile Megamouth shark, Megachasma pelagios, caught off Brazil. Environmental Biology of Fishes 59, 117-123.

Bright, M. 1989. *There are Giants in the Sea*. Robson Books Ltd, London.

Dash, M. 2009. Baron Von Forstner and the U28 sea serpent of July 1915. CFI Blogs http://blogs.forteana.org/node/93

Magin, U. 1996. St George without a dragon: Bernard Heuvelmans and the sea serpent. In Moore, S. (ed) *Fortean Studies Volume 3*. John Brown Publishing (London), pp. 223-234.

Séret, B. & Orstom, A. 1995. First record of a megamouth shark (Chondrichthyes, Megachasmidae) in the Atlantic Ocean, off Senegal. *Cybium* 19, 425-427.

Shuker, K. P. N. 1986a. The Gambian sea-serpent. *The Unknown* Sept 1986, 49-53.

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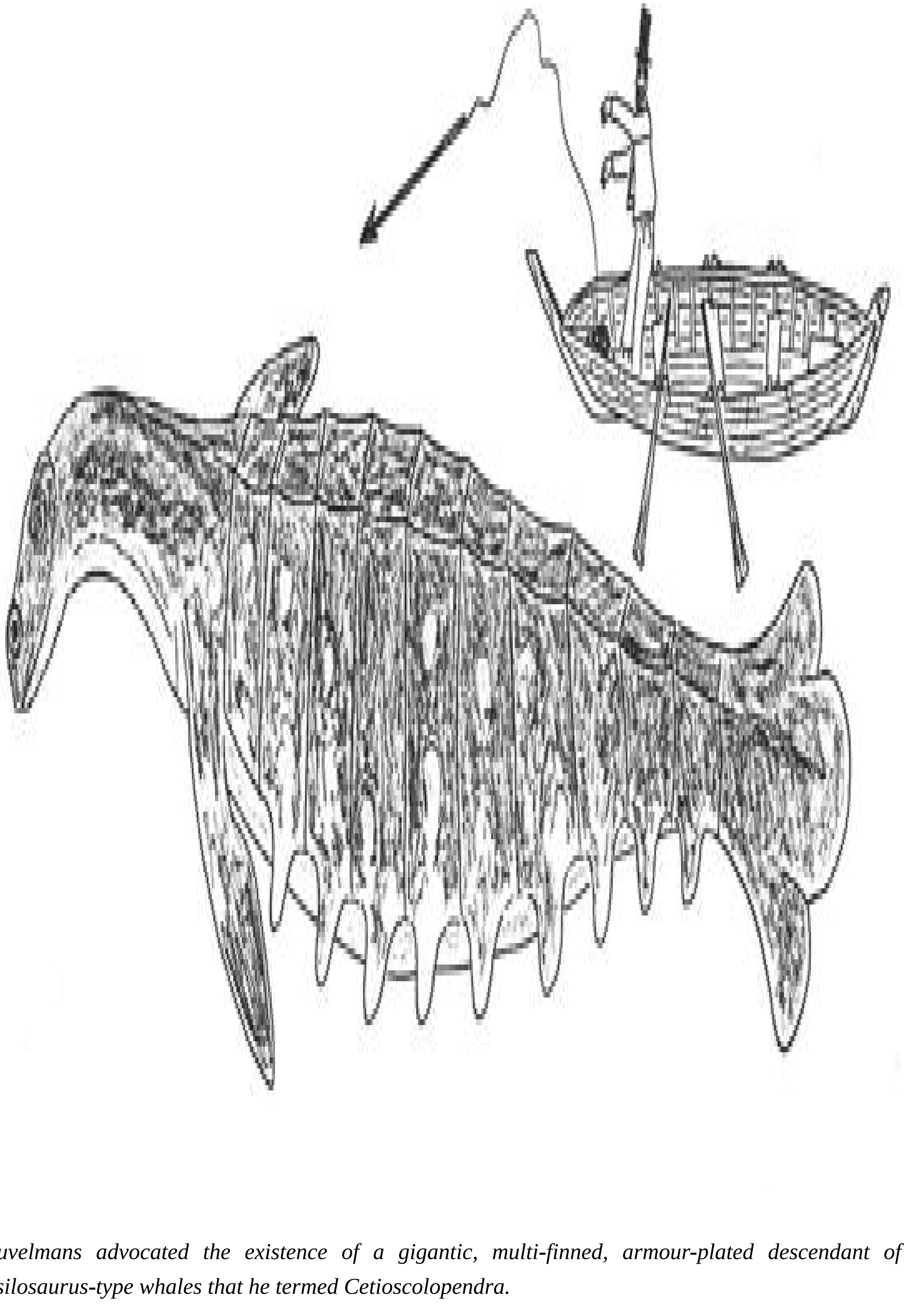
Shuker, K. P. N. 1995. *In Search of Prehistoric Survivors*. Blandford, London.

Con Rit

Remarkable armour-plated sea giant

Location: most famously Hongay, Vietnam, but with alleged sightings across the South China Sea, also across Indian Ocean and around Australian coasts

Time: classic account from 1883, but other sightings from across history **How to make a multi-finned, armour-plated sea-serpent, Heuvelmans-style** The Con Rit is one of the most confusing and perplexing of sea monsters, not necessarily because the accounts themselves are confusing (though they partially are), but mostly because the concept of this creature is a messy composite, seemingly incorporating accounts of very distinct things. As most typically used by cryptozoologists, the name Con Rit applies to a long-bodied, armour-plated sea beast that has been suggested to be a late-surviving archaic whale related to the famous *Basilosaurus* of the Eocene age. We owe this idea to Bernard Heuvelmans, who took several accounts of long-bodied, multi-finned, round-headed sea monsters (mostly from the South China Sea) and combined them with a remarkable 'mystery carcass' from Vietnam to create what he termed Aelian's cetacean centipede *Cetioscolopendra aeliani* (Heuvelmans1968). Heuvelmans seriously proposed that *Basilosaurus* -type whales have survived to the modern day, *and* evolved both lateral fringes of triangular fins as well as a dorsal carapace of big, sheet-like plates (Heuvelmans stuck with the 19th Century idea that ancient whales had armour, even though this had been dismissed during the 1930s).



Heuvelmans advocated the existence of a gigantic, multi-finned, armour-plated descendant of Basilosaurus-type whales that he termed Cetioscolopendra.

The Vietnamese carcass integral to this interpretation was reported by Dr A. Krempf in 1921, but described an encounter passed to him by a coxswain, Tran Van Con. The encounter had occurred 38 years prior (that is, in 1883). Van Con described the discovery of a giant carcass, 18m long and 90cm wide, covered on its upper surface by dark brown segments (each 60cm long and 90cm wide), each of which supported a pair of laterally projecting spines 70cm long. The sheets "rang like sheet-metal" when struck! (Heuvelmans 1968, Roesch 1998).

The armour plates, suggestion of segmentation, and presence of spines projecting from the sides of the body make it sound as if the carcass was that of an arthropod, maybe something like an enormously big, sea-going millipede. This is exactly what has been suggested by some cryptozoologists (Shuker 1995). Needless to say, the concept of such a creature is hard to take seriously. Due to the way their respiratory system works, and the way their bodies are supported internally, arthropods are generally constrained to small size and even truly exceptional giant ones are no more than a couple of metres long.

The death of *Cetioscolopendra*

Bernard Heuvelmans is regarded by many cryptozoologists as an authoritative scholar, a great chronicler of accounts, and a brilliant thinker and theoriser. In fact, his published work shows that he was all too keen to interpret eyewitness accounts too literally, to combine descriptions and accounts when there was no good reason to do so (Magin 1996), to rely on ideas and data that were out-of-date even in the 1950s (Naish 2000, 2001), and to engage in bizarre speculative exercises that cannot be considered reasonable or cautious interpretations of the evidence. He also failed to check original sources, relying instead on popular re-tellings of key accounts (Dash 2009).

Whatever the 'Con Rit' carcass was (and assuming that it really existed), we need to remember the different filters the 1883 account passed through before reaching the cryptozoological literature. Not only was it translated from Vietnamese by Krempf, it was also a near-40-year old memory by the time he heard it. As Roesch (1998) concluded in his review of the case, we're never really going to be able to say what the carcass was. Its shape, presence of armour plates and long spines perhaps suggest that it was the decomposing body of a giant fish (a partial whale carcass with hard-dried skin is also a possibility), but it's going too far to pretend that we can ever come to any confident conclusion.

Furthermore, even *if* we assume that the carcass existed and that the account was accurate, there's no reason at all to associate it with sea monster accounts that describe multiple fins and rounded heads. Indeed, Heuvelmans's idea of an armour-plated 'cetacean centipede' is bogus on every level.

***Cetioscolopendra*: mega-prawn** The amazing Vietnamese carcass accurately described by Tran Van Con in 1921 was clearly not that of an anachronistic armoured whale, but instead that of a gigantic armour-plated pelagic crustacean, the largest known by far. The good scientific name that Heuvelmans published for this monstrous prawn, *Cetioscolopendra aeliani*, is thus transferred from the vertebrates to the arthropods.

The incredibly long body of *Cetioscolopendra* has led to occasional suggestions that it might be a remipede, a group of poorly known, tiny, long-bodied crustaceans that inhabit aquifers. However, the large carapace that covers its head and thorax, the form of its numerous jointed limbs and other features show that it is a gargantuan, pelagic, long-bodied member of Dendrobranchiata, the prawns.

While, previously, the largest known prawn (*Panaeus monodon*) reaches about 35cm, *Cetioscolopendra* belongs to a poorly known panaeid lineage that evolved in isolation in the South China Sea. It is assumed that a low amount of competition from marine vertebrates in this region encouraged the evolution of this enormous arthropod. Lateral spines that project from the animal's dorsal plates help protect it from predators but it is an also extremely cryptic vertical migrator, spending the days in deep-water channels like the Palawan Trench. Extremely little is known about the ecology and behaviour of this animal and there are concerns that the substantial degradation currently occurring in its environments could well result in imminent extinction.

Cetioscolopendra breaks all the rules as goes the hypothesised maximum size for arthropods. As shown here, it dwarfs other giant crustaceans and is on par with big cetaceans in term of length and mass.

Dash, M. 2009. Baron Von Forstner and the U28 sea serpent of July 1915. CFI Blogs http://blogs.forteana.org/node/93

Heuvelmans, B. 1968. *In the Wake of the Sea-Serpents*. Hill and Wang, New York.

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Flying Rods

Surreal, ethereal, super-fast 'skyfish' of the atmosphere

Location: sightings alleged worldwide, but mostly from the USA and Mexico
Time: predominantly 1994 to present, but with alleged sightings from 1910 and even earlier

The remarkable world of Rods!

Rods - also known as Skyfish - might be among the most unbelievable and ridiculous of mystery creatures, and indeed they're so unbelievable and ridiculous that belief in them is certainly a minority, or 'niche', movement (their inclusion in this book - supposedly focusing on cryptids - will be frowned upon by some). According to those who have championed their existence, Rods are elongate, cylindrical (err, rod-shaped) creatures, approximately 60cm long, fringed on both sides by undulating fins something like those on the bodies of flatfish. Oh, and… they fly. *Really* quickly, as in, at speeds exceeding 200 mph, thus making them typically invisible to the human eye. Rod mythology goes even further than this, with some believers saying that Rods have been filmed in Earth's upper atmosphere and even in space. It's also been said that they can be seen in photos dating back to 1910 at least. Other believers say that gigantic Rods - "as big as zeppelins" - have been captured on film. Apparently one of these 'Megarods' is seen in some of the 9/11 footage. An ancient Argentinean stone carving that reveals an object something like an oak leaf is also said by Rod enthusiasts to be an early depiction of a Rod.

This view of Rods as genuine biological entities has been semi-popular in the conspiracy and ufology community more so than the cryptozoological one. The fact (we use that term for convenience) that some Rods have been filmed flying over airports and at military installations has led to suggestions that Rods might be experimental military technology of some sort. Because Rods have a translucent quality and often seem only partially visible, leading Rod proponent Jose Escamilla has suggested that they somehow phase in and out of our dimension, perhaps being fourth dimensional creatures of some sort. A 2007 TV documentary on Rods (arguably one of the best single sources of information on Rods and the ideas associated with them) included the inferred speculation that Rods could be direct descendants of a hypothetical 'protopterygote' creature suggested by some researchers to be the ancient ancestor of winged insects. Such creatures are suggested to have been long-bodied arthropods with numerous, paired fins projecting from the sides of their bodies.

Rationality and restraint

What are Rods, really? For as long as the 'creatures' have been around, the majority of commenters have noticed that they've almost certainly flying insects (most typically moths) captured on film, their beating wings and rapid flight trajectory creating the impression of a rapidly moving, elongate flying thing with whirring fins. Specifically, the idea that people are filming long-bodied creatures with undulating 'fins' is an artefact of slow shutter speeds, since faster shutter speeds capture the animals without the blurring and without making them look like 'Rods'. The insect hypothesis is regarded as self-evident by many sceptics, and was definitively confirmed in 2005 when Rods - identical to those identified by Escamilla and others as the real deal - captured on film at Tongchua City, China, were trapped in nets. They were moths and other insects.

Experiments show that slow shutter speeds can in fact make just about any fast-moving flying (or even swimming) object with fluttering structures look like a 'Rod', and some of the blurry streaks said to represent Rods in photos and on film are almost certainly birds or bats. The ones filmed in space are almost certainly fast-moving bits of space debris. This explanation doesn't go for all objects claimed to be Rods: some are photographical artefacts.

A modest speculative scenario

Turning once again to our speculative alternative universe, let's pretend that Rods are real, and really are the (typically) 60-cm-long, flying, rod-shaped creatures suggested by some. Rods are clearly geographically widespread, occurring throughout the atmospheres of the world. Pale, translucent tissues camouflage them against clouds and the general colour of the sky, meaning that (combined with their hyper-rapid flight) they are rarely seen, except by people who go to special trouble to find them in filmed footage.

Rods are flying invertebrates that never land or touch the ground (except when dead). They belong to a unique animal lineage that evolved directly from the mysterious dinocarididans of the Cambrian seas. Dinocarididans as known from the fossil record are bulky predators with large eyes and segmented arms on their heads, used to grab bottom-dwelling prey (the best known member of the group is the metre-long *Anomalocaris*, originally described from Canada but later discovered in China, Australia, the USA and elsewhere). One dinocarididan lineage took to living in surface waters and evolved a substantially lightened, less keratinised body, eventually dispensing with body armour altogether while at the same time taking to the exploitation of ocean breezes and the absorption of nutritious chemical froth found on the ocean surface. Thereafter, these post-Cambrian dinocarididans - we name them volicarididans - became dedicated to an aerial lifestyle, dispensing with mouths and guts and able to obtain moisture and nutrients by absorbing dust, aerosols and organic particles from the atmosphere.

The incredible size discrepancy present between the millions of 'average' Rods that have been seen versus the small number of gigantic Megarods hints at a peculiar, complicated biology. Megarods - living concealed in the upper atmosphere for most of their long lives - are the only members of the Rod population capable of reproduction. They are parthenogenetic females, likely subsisting at very low population size. Their sole purpose is to grow vast numbers of juvenile Rods within their main body chamber, between 10 and 20 of which are born every day. Rods are short-lived and act as 'workers' for their mother, collecting more nutrition than they need to fuel their locomotion. A profoundly developed homing instinct that is not yet fully understood allows them to relocate their mother, re-enter a birthing port and die. The chemicals they have collected are then absorbed by the Megarod. Megarods can move quickly, like their offspring, but are mostly stationary. Since they are semi-translucent, cryptic and large (typically 30m long), yet with a very low tissue density that makes them hard to detect via radar, it is feared that a collision with an aircraft is only a matter of time. Indeed, some researchers think that several otherwise unexplained air traffic disasters are the result of unreported and unrealised collisions with static Megarods.

Megarods are in fact only one among numerous different skybeasts that, together, form the so-called Critterian Fauna. Other Critterians resemble giant, translucent sky-jellyfish or immense, amoeba-like carnivores (Constable 1978, Shuker 2008).

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Postscript

So, there we have it… the *Cryptozoologicon, Volume I*. We hope that you enjoyed our exercises in informed speculative crypto-fiction but, above all, we hope that that you liked and enjoyed the artwork we produced. As described in the Introduction, our primary motivation in producing the *Cryptozoologicon* is that we wanted to indulge ourselves as goes the application of speculative evolution to the subject of cryptozoology. Inspired by the rampant and often highly suspect speculations of cryptozoologists themselves, we had a ball.

Alternative histories of Hominidae, seas full of Mesozoic- and Paleogene-grade giant reptiles and mammals, hypothetical giant bats, aquatic marsupials, gigantic pinnipeds, a view of primate diversity that includes globally distributed giant monkeys and carnivorous merbeings, a cryptic lineage of gargantuan deepsea super-sharks… all these and more are explicitly discussed, alluded to, or hinted at in the cryptozoological literature, the frequent assertion accompanying these speculations being that mainstream scientists are too cynical, too blinkered, too biased, or just too stupid and lazy to appreciate the 'evidence' that cryptozoologists have amassed.

As we've alluded to here - and as other sceptical authors have stated or shown in their own investigations - the primary evidence used as the bedrock for these speculations is too suspect or too nonsensical to stand on its own. Indeed, sloppy and wishful thinking pervades cryptozoology, bringing the topic into disrepute. If this really is our opinion why, the cryptozoological supporter might ask, are we so interested in the subject? That's a good question. The answer comes from the fact that sightings of and stories about mysterious creatures fit into a large, complex picture that involves the evolution of mythology, the cultural and individual biases that people possess, and the ability of people to observe, recall and explain their observations. None of this means that accounts of mystery animals are not, by definition, descriptions of encounters with real animals, but it does mean that cryptozoology should be seen as a mixture of sociology, psychology and ethnology as well as zoology. The naive and purely zoological approach of the cryptozoological literalists needs to die. In the end, the speculative hypotheses that characterise the cryptozoological literature are exercises in speculative fiction, making the entire field the longest-running project in speculative zoology yet devised by our species. For this reason, it is of enormous interest, and very much worthy of study and even admiration.

Volume I might have come to an end, but what about *VolumeII*?

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